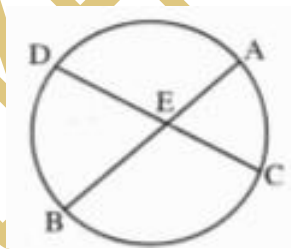
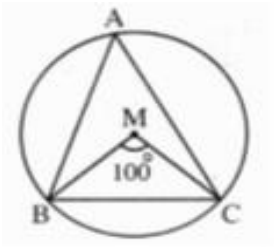
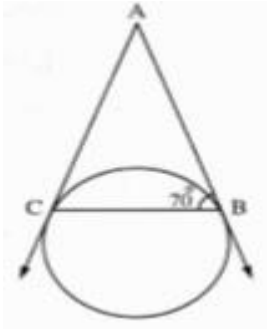
المراجعة رقم (1)

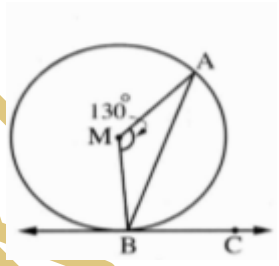
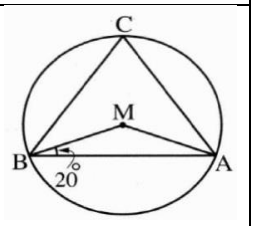
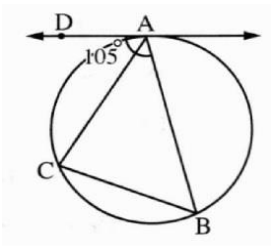
الترم الثانى

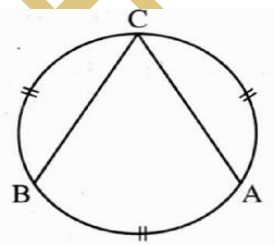
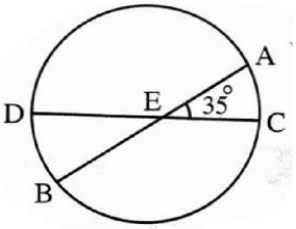
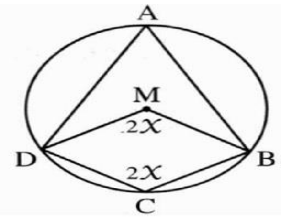
PREP 3 FINAL REVISION

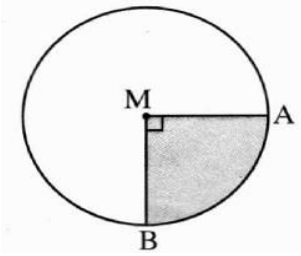
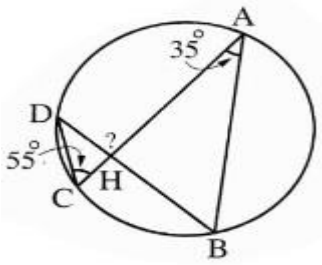
SECOND GEOMETRY

Choose the correct answer:

1)	In the opposite figure: m $\overset{\frown}{(DB)} = 80^o$, m $\overset{\frown}{(AC)} = 60^o$, then m $(\angle AEC)$ = ... (20° or 30° or 70° or 140°) 
2)	The two tangents which are drawn from the two endpoints of a diameter of a circle are ..... (parallel. or intersecting. or perpendicular. or coincide.)
3)	In the opposite figure: M is a circle , m $(\angle BMC) = 100°$, then m $(\angle BAC)$ = ... (150° or 100° or 50° or 25°) 
4)	In the opposite figure: $\overrightarrow{AB}$ and $\overrightarrow{AC}$ are two tangents to the circle at B and C , m $(\angle ABC) = 70°$, then m $(\angle A)$ = ... (140° or 70° or 40° or 35°) 
5)	Sum of the measures of any two opposite angles in the cyclic quadrilateral equals ..... (90° or 180° or 270° or 360°)

6)	Measure of an are which represents $\frac{1}{3}$ of the measure of the circle equals = ... (60° or 90° or 120° or 180°)
7)	In the opposite figure: $\overrightarrow{BC}$ is a tangent to the circle M at B if m $(\angle AMB) = 130°$, than m $(\angle ABC)$ = ... (280° or 140° or 70° or 65°) 
8)	The length of the arc which represents $\frac{1}{4}$ of circumference of a circle = ... ($2\pi r$ or πr or $\frac{1}{2}\pi r$ or $\frac{1}{4}\pi r$)
9)	In a cyclic quadrilateral, each two opposite angles are ..... equal or supplementary intersecting or corresponding
10)	If surface of circle M ∩ surface of circle N = ∅ , than the two circles are ..... intersecting or distant touching internally or touching externally
11)	In the opposite figure: Circle M , if m $(\angle MBA) = 20°$, then m $(\angle C)$ = ... (120° or 70° or 40° or 30°) 
12)	In the opposite figure: If $\overleftrightarrow{AD}$ is a tangent to the circle at A , m $(\angle DAB) = 105°$, then m $(\angle ACB)$ = ... (75° or 60° or 50° or 35°) 

13)	The number of common tangents for the two tangent circles externally is ..... (4 or 3 or 2 or infinite number)
14)	The figure which the circle doesn't passing through its vertices is ..... (square or rectangle or rhombus or triangle)
15)	In the opposite figure: m $(\angle C)$ = ... (45° or 50° or 30° or 60°) 
16)	In the opposite figure: $(\angle AEC) = 35°$, then m $\overset{\frown}{(AC)}$ +m $\overset{\frown}{(DB)}$ = ... (17.5° or 35° or 70° or 140°) 
17)	The inscribed angle opposite to an arc greater than the semicircle is ..... (straight or acute or right or obtuse)
18)	In the opposite figure: If m $(\angle DMB)$ = m $(\angle DCB) = 2x$, than m $(\angle A)$ = ... (60° or 70° or 40° or 30°) 
19)	The diameter length of a circle is 8 cm. if the straight line L is at a distance 4 cm. form the Centre , then the straight line L is ..... a secant to the circle. or outside the circle. a tangent to the circle. or an axis of symmetry to the circle.

20)	The measure of the exterior angle at any vertex of a cyclic quadrilateral vertices..... the measure of the opposite interior of the adjacent angle. $(> \ or \ < \ or \ = \ or \ \geq)$
21)	The number of common tangents of two distant circles is ..... (4 or 3 or 2 or infinite)
22)	The length of the arc opposite to the inscribed angle of measure .60° = ... Circumference of the circle. ($\frac{1}{6}$ or $\frac{1}{3}$ or $\frac{1}{2}$ or otherwise)
23)	The inscribed angle drawn in a semicircle ..... (acute or obtuse or reflex or right)
24)	In the opposite figure: $\overline{MA}$ and $\overline{MB}$ two radii in a circle M , $\overline{MA} \perp \overline{MB}$ and the radius length is 7 cm. then the perimeter of the shaded part =.....cm. (14 or 21 or 38.5 or 25) 
25)	The measure of the circle with radius r is ..... ($2\pi r$ or 180^o or πr or 360^o)
26)	In the opposite figure: m (∠ C) = 55° , m (∠ A) = 35° , then m (∠ AHD) = ... (20^o or 90^o or 70^o or 110^o) 
27)	The Centre of inscribed circle of a triangle is the intersection point of is ..... altitudes. or axes of symmetry of its sides. medians. or bisectors of its interior angles.

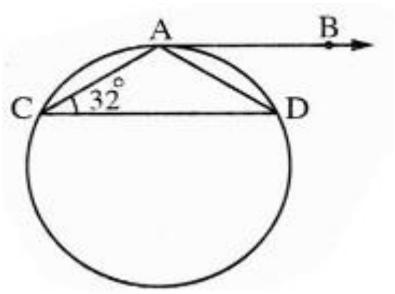
28) In the opposite figure:

$\overrightarrow{AB}$ is tangent to the circle,

m (∠ C) = 32°

, then m (∠ BAD) = ...

(64° or 32° or 148° or 58°)



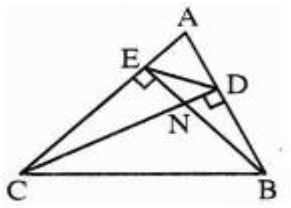
29) If M and N are two touching externally circles with radii lengths 9 cm. and r cm. respectively , if MN = 14 cm. , then r = ... cm.

(10 or 23 or 5 or 7)

30) In the opposite figure:

How many cyclic quadrilaterals?

(1 or 2 or 3 or 4)



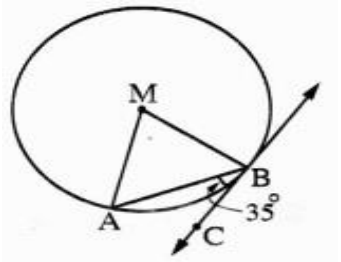
31) In the opposite figure:

$\overleftrightarrow{BC}$ is a tangent to the circle M

, m (∠ ABC) = 35°

, then m (∠AMB) = ...

(105° or 120° or 70° or 60°)

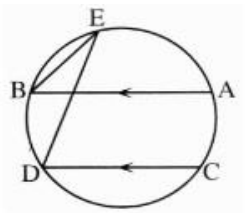


32) In the opposite figure:

$\overline{AB}$ and $\overline{CD}$ are two parallel chords of a circle ,

m(∠DEB) = 25° , then m $\overset{\frown}{(AC)}$ = ...

(100° or 75° or 50° or 25°)



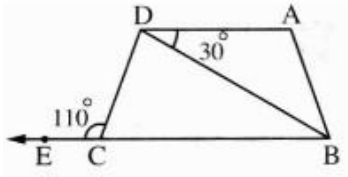
33) In the opposite figure:

ABCD is a cyclic quadrilateral ,

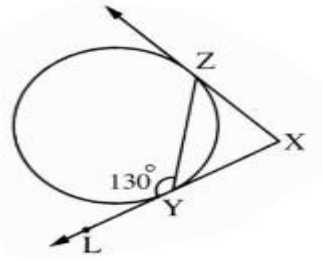
m (∠ ADB) = 30°

and m (∠DCE) = 110° , then m (∠ABD) = ...

(30° or 40° or 60° or 70°)

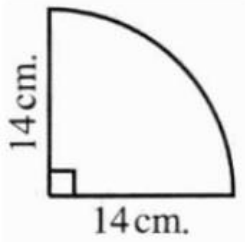


34) In the opposite figure:
$\overrightarrow{XZ}$, $\overrightarrow{XL}$ are two tangents to the circle at Y and Z ,
m (∠ LYZ) = 130° , then m (∠ X) = ...
(50° or 65° or 80° or 100°)

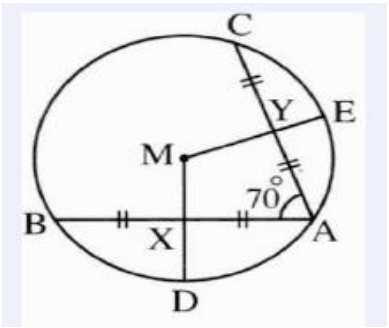


35) If the measures of the two arcs are equal in the same circle then their chords are .....
intersecting. or parallel
perpendicular. or equal in length.

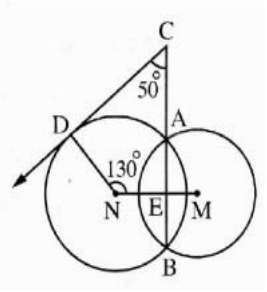
36) In the opposite figure:
A metallic wire is formed in the form of a quarter of a circle of radius length 14 cm. as shown , then the length of the wire = ...
where $\pi = \frac{22}{7}$
(154 cm. or 50 cm. or 26 cm. or 22cm.)



1) a) In the opposite figure:
$\overline{AB}$ and $\overline{AC}$ are two equal chords in length
In the circle M , X is the midpoint of $\overline{AB}$ and Y
Is the midpoint of $\overline{AC}$, m (∠ CAB) = 70°
(1) Calculate : m (∠ DME)
(2) Prove that: XD = YE



b) In the opposite figure:
M and N are two circles intersecting at A and B.
and C ∈ $\overrightarrow{BA}$,
D ∈ the circle N, m (∠ MND) = 130° ,
m (∠ BCD) = 50° ,
Prove that : $\overrightarrow{CD}$ is a tangent to the circle at D

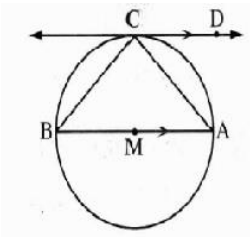


2) a) In the opposite figure:

$\overline{CD}$ is a tangent to the circle M at C,

$\overrightarrow{CD} // \overline{BA}$

Prove that : m (∠ DCA) = 45°

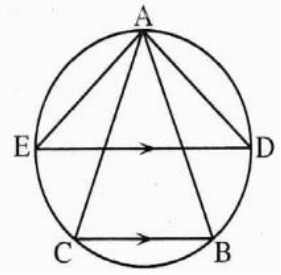


b) In the opposite figure:

$\overline{DE} // \overline{BC}$

Prove that

M (∠ DAC) = m (∠ BAE)

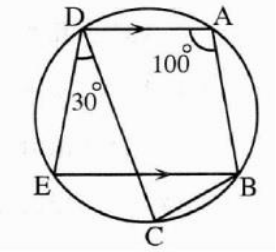


3) a) In the opposite figure:

$\overline{AD} // \overline{BE}$,m (∠ BAD) = 100°

And m (∠ CDE) = 30°

Find: m (∠ ADC)



b) In the opposite figure

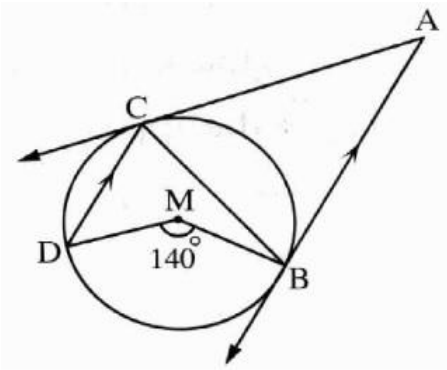
$\overrightarrow{AB}$ and $\overrightarrow{AC}$ are two tangents to the circle

M at B and C

$\overline{AB} // \overline{CD}$,

m (∠ BMD) = 140°

Find: m (∠ A)



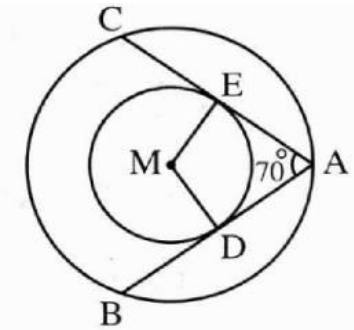
4) a) In the opposite figure:

Two concentric circles at M ,

$\overline{AB}$ and $\overline{AC}$ are two tangent segments to the smaller circles, m (∠ A) = 70°

(1) Find: m (∠ DME)

(2) Prove that : AB = AC

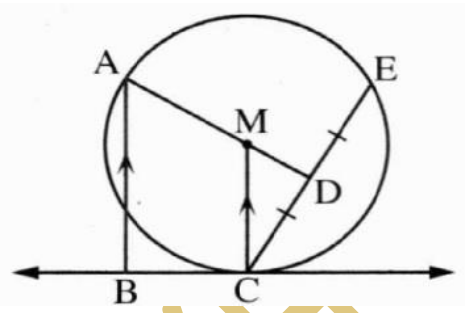


b) In the opposite figure:

$\overleftrightarrow{BC}$ is a tangent to the circle M at C

D is the midpoint of $\overline{EC}$, $\overline{MC} // \overline{AB}$

Prove that : ABCD is a cyclic quadrilateral.



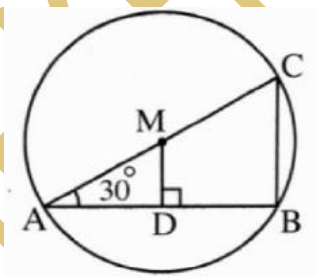
5) a) In the opposite figure:

A circle of Centre M , $\overline{MD} \perp \overline{AB}$,

If m ($\angle$ A) = 30°

(1) Prove that : $\overline{MD} // \overline{CB}$

(2) Find : m ($\angle$ C)



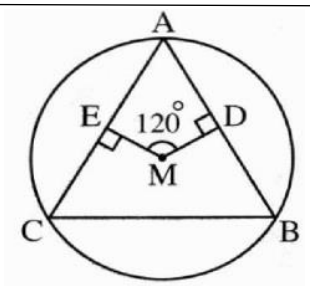
b) In the opposite figure:

A circle M , $\overline{MD} \perp \overline{AB}$,

$\overline{ME} \perp \overline{AC}$ where MD = ME ,

m ($\angle$ DME) = 120°

Prove that : the triangle ABC is equilateral.

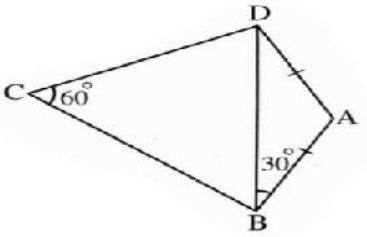


6) a) In the opposite figure:

If: AB = AD , m ($\angle$ ABD) = 30° ,

m ($\angle$ C) = 60°

Prove that : ABCD is a cyclic quadrilateral

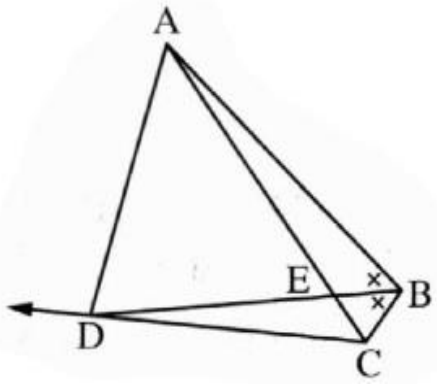


b) In the opposite figure:

ABCD is a cyclic quadrilateral, $\overrightarrow{BD}$ bisects $\angle$ ABC,

If $\overline{BD} \cap \overline{AC} = \{E\}$

Prove that : $\overrightarrow{CD}$ is a tangent to the circle Passing through the vertices of Δ BEC

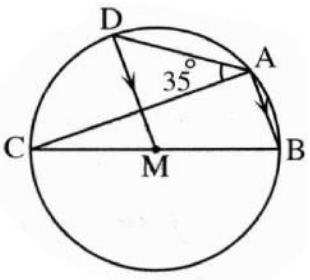


7) a) In the opposite figure:

$\overline{BC}$ is a diameter in the circle M ,

m (∠ CAD) = 35°, $\overline{AB} // \overline{DM}$,

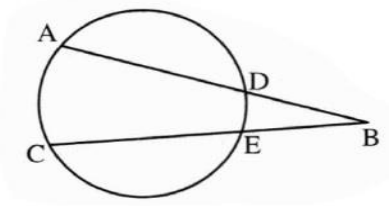
Find: m (∠ ABC)



b) In the opposite figure:

If m $\overset{\frown}{(AC)}$ = 120° , m $\overset{\frown}{(DE)}$ = 50°

Find: m (∠ ABC)

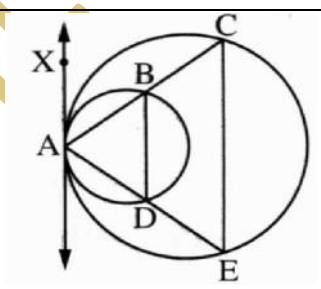


8) a) In the opposite figure:

If $\overleftrightarrow{AX}$ is a common tangent

to the two circles at A.

Prove that: $\overline{BD} // \overline{CE}$



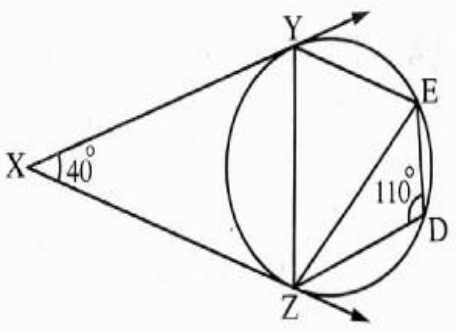
b) In the opposite figure:

$\overrightarrow{XY}$ and $\overrightarrow{XZ}$ are two tangents

to the circle from the point X at Y , Z

, if m (∠ EDZ) = 110°, m (∠ YXZ) = 40°

Prove that : m $\overset{\frown}{(ZDE)}$ = m $\overset{\frown}{(ZY)}$



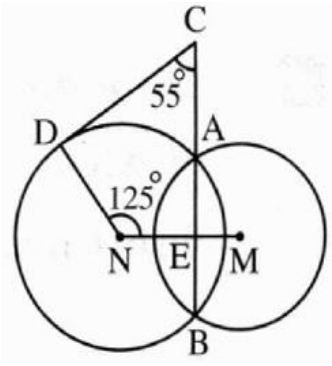
9) a) In the opposite figure:

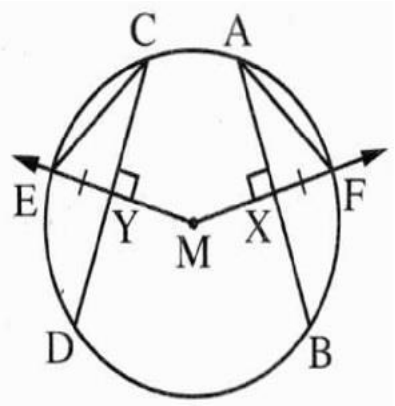
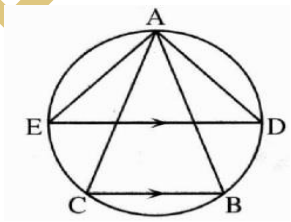
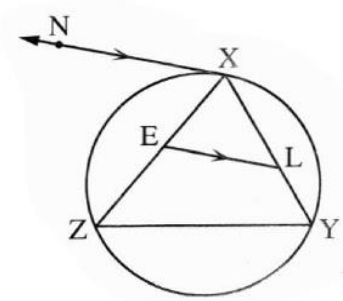
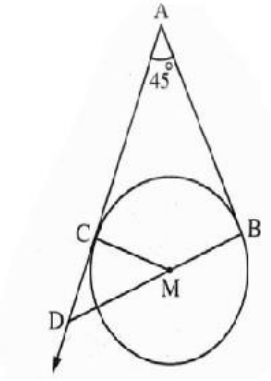
M and N are two intersecting circles at A and B

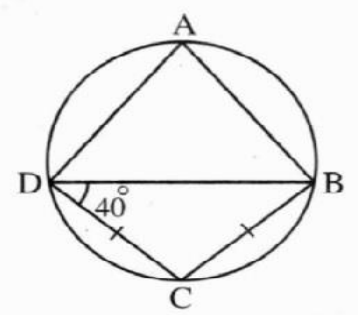
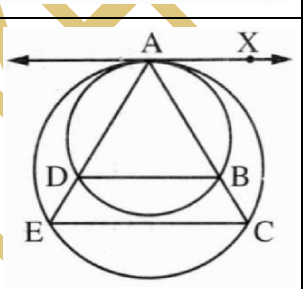
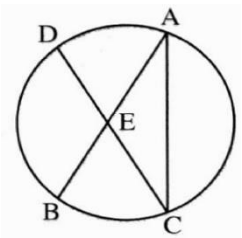
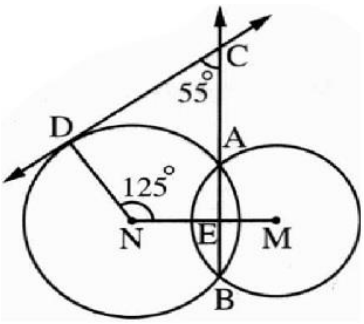
, C ∈ $\overleftrightarrow{BA}$, D ∈ the circle N

, m (∠ MND) = 125° and m (∠ BCD) = 55°

Prove that: $\overleftrightarrow{CD}$ is a tangent to circle N at D



	b) In the opposite figure: $\overline{AB}$ and $\overline{CD}$ are two chords in the circle M , $\overrightarrow{MX} \perp \overline{AB}$ and intersects the circle in F , $\overrightarrow{MY} \perp \overline{CD}$ and intersects the circle at E where FX = EY Prove that: (1) AB = CD (2) AF = CE 
10)	a) In the opposite figure: ABC is an inscribed triangle inside a circle , $\overline{DE} // \overline{BC}$ Prove that: m (∠ DAC) = m (∠ BAE) 
	b) In the opposite figure: XYZ is an inscribed triangle in a circle , $\overline{LE}$ paralled tangent $\overrightarrow{XN}$ Prove that : LYZE is cyclic quadrilateral. 
11)	a) In the opposite figure: $\overline{AB}$, $\overline{AC}$ are two tangents To circle M at B , C , m (∠ A) = 45° Prove that: (1) ABMC is cyclic quadrilateral. (2) AD = AB + MB 

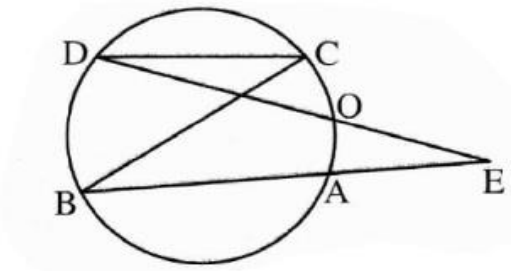
	b) In the opposite figure: ABCD is a quadrilateral inscribed in circle , BC = CD , m (∠ BDC) = 40° Find: m (∠ A) 
12)	a) In the opposite figure: Prove that: $\overline{BD} // \overline{CE}$  b) In the opposite figure: $\overline{AB}$, $\overline{CD}$ are two equal chords in length Prove that : the triangle ACE is an isosceles triangle. 
13)	a) In the opposite figure: M and N are two intersecting circles at A and B , C ∈ $\overrightarrow{BA}$ and D ∈ the circle N , m (∠ MND) = 125° , m(∠ BCD) = 55° Prove that: $\overleftrightarrow{CD}$ is a tangent to the circle N at D  b) $\overline{AB}$ and $\overline{CD}$ are two chords in the circle M , $\overrightarrow{MX}$ is drawn perpendicular to $\overline{AB}$ to intersect the circle in F and $\overline{MY}$ is drawn perpendicular to $\overline{CD}$ to intersect the circle at E , if FX = EY Prove that : (1) AB = CD (2) AF = CE

14) **a)** In the opposite figure:

E is a point outside the circle

Prove that :

$m(\angle DCB) > m(\angle E)$



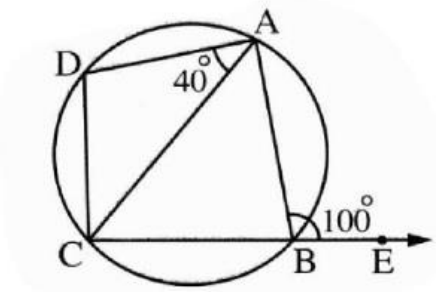
b) In the opposite figure:

$m(\angle ABE) = 100°$

, $m(\angle CAD) = 40°$

Prove that:

$m\overset{\frown}{(CD)} = m\overset{\frown}{(AD)}$



15) Complete:

a) The straight line passing through the center of the circle and the intersection point of the two tangents are ..... to the chord of tangency of those two tangents.

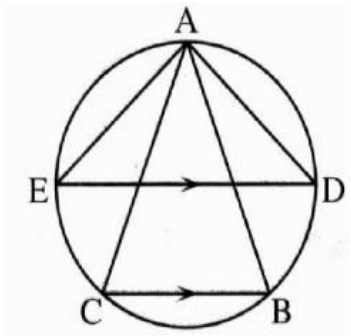
b) In the opposite figure:

ABC is an inscribed

triangle inside the circle

, $\overline{DE} // \overline{BC}$

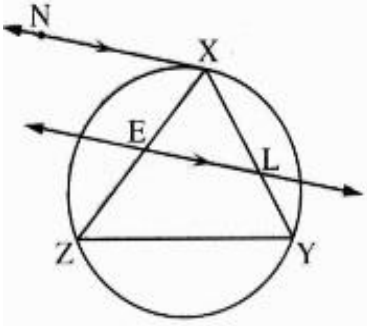
Prove that : $m(\angle DAC) = m(\angle BAE)$



16) In the opposite figure:

XYZ is an inscribed triangle in a circle , if $L \in \overline{XY}$ and $\overleftrightarrow{LE}$ is drawn parallel to the tangent $\overrightarrow{XN}$ which touches the circle at X and intersects $\overline{XZ}$ at E

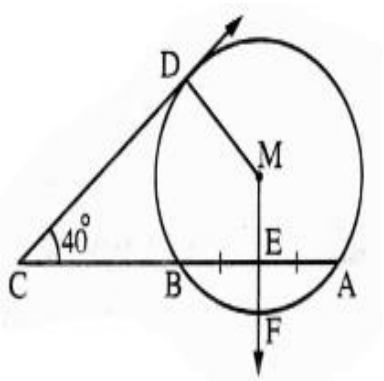
Prove that : LYZE is a cyclic quadrilateral.



17) a) In the opposite figure:

A circle M whose radius length is 10 cm.,
m (∠ DCA) = 40° , AB = 16 cm.
, E is the midpoint of $\overline{AB}$, $\overrightarrow{CD}$ is a tangent to the circle

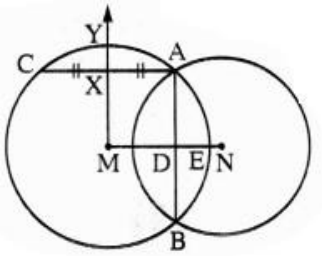
Find by proof : m (∠ DMF) ,
the length of $\overline{FE}$



b) In the opposite figure:

If M and N are two intersecting circles at A and B , AB = AC ,
X is the midpoint of $\overline{AC}$

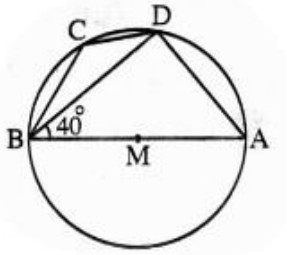
Prove that : XY = DE



18) a) In the opposite figure:

$\overline{AB}$ is a diameter of circle M ,
m (∠ ABD) = 40°

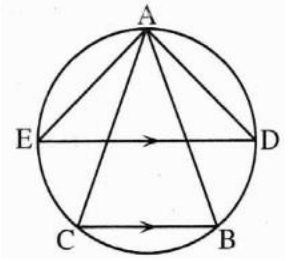
Find
m (∠ A) , m (∠ C)



19) b) In the opposite figure:

ABC is an inscribed triangle in the circle ,
$\overline{ED}$ // $\overline{BC}$

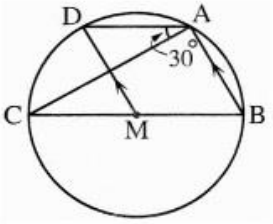
Prove that: m (∠ DAC) = m (∠ BAE)



20) a) In the opposite figure:

$\overline{CB}$ is a diameter of circle M ,
$\overline{AB}$ // $\overline{DM}$, m (∠ DAC) = 30°

Find: m (∠ ACB)



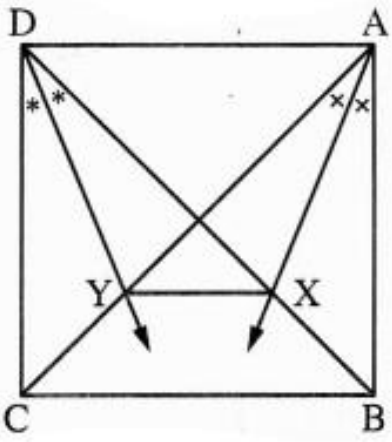
b) In the opposite figure:

ABCD is a square , $\overrightarrow{AX}$ bisects ∠ BAC

and $\overrightarrow{DY}$ bisects ∠ CDB

(1) Prove that the figure AXYD is cyclic quadrilateral

(2) Find with proof m (∠ DXY)



21) In the opposite figure:

$\overrightarrow{XZ}$ and $\overrightarrow{XY}$ are two tangents at Z and Y,

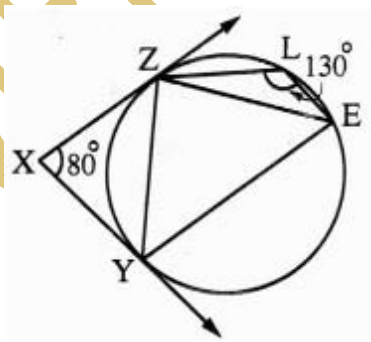
m (∠ YXZ) = 80° , m (∠ ELZ) = 130°

Prove that:

(1) ZE = ZY

(2) $\overline{XZ} // \overline{YE}$

(3) $\overline{ZE}$ is a tangent to the circle passing through the points X , Y and Z



22) a) $\overline{AB}$ is a diameter in the circle M , $\overline{AC}$ is a chord in it where m (∠ BAC) = 30° , $\overline{BC}$ is drawn and $\overrightarrow{MD}$ is drawn perpendicular to $\overline{AC}$ and intersect it in D ,

Prove that

(1) $\overline{MD} // \overline{BC}$ (2) The length of $\overline{BC}$ = length of radius.

b) In the opposite figure:

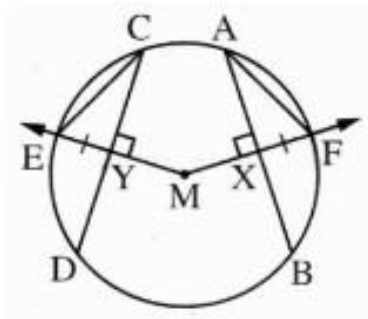
$\overline{AB}$ and $\overline{CD}$ are two chords in the circle M ,

$\overrightarrow{MX} \perp \overline{AB}$ and intersect it at F

, $\overrightarrow{MY} \perp \overline{CD}$ and intersect it at E

, FX = EY

Prove that : (1) AB = CD (2) AF = CE



23) a) Prove that:

In a cyclic quadrilateral each two opposite angles are supplementary.

b) In the opposite figure:

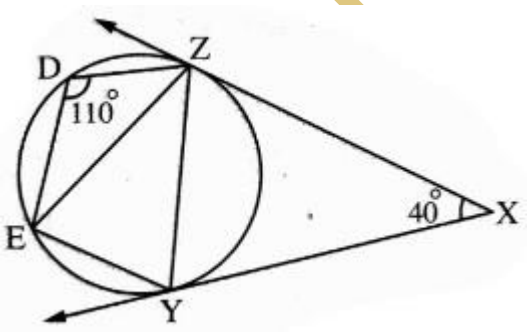
$\overrightarrow{XY}$, $\overrightarrow{XZ}$ are two tangents to the circle from point X ,

m (∠ D) = 110° ,

m (∠ X) = 40°

Prove that

m $\overset{\frown}{(ZE)}$ = m $\overset{\frown}{(ZY)}$



24) a) A is a point outside a circle M , $\overrightarrow{AB}$ is a tangent to the circle at point B , $\overrightarrow{AM}$ intersects the circle M at C and D respectively ,

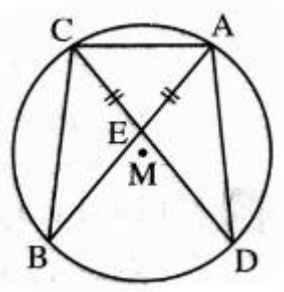
m (∠ A) = 40° and draw $\overline{BM}$

Find with proof: m (∠ BDC)

b) In the opposite figure

$\overline{AB}$, $\overline{CD}$ are two chords in the circle M intersecting at E , If AE = CE

Prove that: m (∠ ACB) = m (∠ CAD)



25) $\overline{AB}$ is a diameter in the circle M , $\overline{AC}$ is a chord in this circle and D is the midpoint of $\overline{AC}$, $\overrightarrow{DM}$ was drawn to intersect the tangent to the circle M at B in E

Prove that:

(1)The figure ADBE is cyclic quadrilateral.

(2) m (∠ CMB) = 2 m (∠ MEB)

The answer

1)	70°	2)	parallel
3)	50°	4)	40°
5)	180°	6)	120°
7)	65°	8)	$\frac{1}{2}\pi r$
9)	supplementary	10)	distant
11)	70°	12)	75°
13)	3	14)	rhombus
15)	60°	16)	70°
17)	obtuse	18)	60°
19)	a tangent to the circle	20)	=
21)	4	22)	$\frac{1}{3}$
23)	right	24)	25
25)	360°	26)	90°
27)	bisectors of its interior angles	28)	32°
29)	5	30)	2
31)	70°	32)	50°
33)	40°	34)	80°
35)	equal in length	36)	50 cm

1)(a) ∵ X is midpoint of $\overline{AB}$ ∴ $\overline{MX} \perp \overline{AB}$

∵ Y is midpoint of $\overline{AC}$ ∴ $\overline{MY} \perp \overline{AC}$

∵ The sum of measure of the interior

angle of the quadrilateral AXMY = 360°

∴ m ($\angle XMY$) = 360° – (70° + 90° + 90°) = 110°

∴ m ($\angle DME$) = 110o (Q.E.D. 1)

∴ AB = AC ∴ MX = MY

∴ MD = ME (lengths of two radii)

By subtracting

∴ XD = YE (Q.E.D. 2)

(b) ∵ $\overleftrightarrow{MN}$ is the line of centres , $\overline{AB}$ is the common chord

∴ $\overline{AB} \perp \overline{MN}$ ∴ m ($\angle AEN$) = 90o

∵ The sum of measure of the interior angle

of the quadrilateral CDNE = 360°

∴ m ($\angle CDN$) = 360° – (50° + 130° + 90°) = 90°

∴ $\overleftrightarrow{ND} \perp \overleftrightarrow{CD}$

∴ $\overleftrightarrow{CD}$ is a tangent to the circle N at D (Q.E.D.)

2)(a) ∵ $\overleftrightarrow{DC} // \overline{AB}$

∴ m $\overset{\frown}{(AC)}$ = m $\overset{\frown}{(BC)}$

, ∴ $\overline{AB}$ is a diameter in circle M

∴ m $\overset{\frown}{(ACB)}$ = 180°

∴ m $\overset{\frown}{(AC)}$ = 180° ÷ 2 = 90°

, ∴ m ($\angle DCA$) = $\frac{1}{2}$ m $\overset{\frown}{(AC)}$

∴ m ($\angle DCA$) = $\frac{1}{2}$ × 90° = 45° (The req.)

3)(a) ∵ m (∠ EDC) = m (∠ EBC)

(two inscribed angle subtended by $\overset{\frown}{EC}$)

∴ m (∠ EBC) = 30°

, ∵ $\overleftrightarrow{AD} // \overleftrightarrow{BE}$, $\overleftrightarrow{AB}$ is a transversal

∴ m (∠ A) + m (∠ ABE) = 180°

(two interior angle on the same side

of the transversal)

∴ m (∠ ABE) = 180° – 100° = 80°

∴ m (∠ ABC) = 80° + 30° = 110°

, ∵ ABCD is a cyclic quadrilateral

∴ m (∠ ABC) + m (∠ ADC) = 180°

∴ m (∠ ADC) = 180° – 110o = 70o (the req.)

(b) ∵ m (∠ BCD) = $\frac{1}{2}$ m (BMD)

(inscribed and central angle subtended by $\overset{\frown}{AD}$)

∵ m (∠ BCD) = $\frac{1}{2}$ × 140° = 70°

, ∵ $\overleftrightarrow{AB} // \overleftrightarrow{CD}$, $\overleftrightarrow{BC}$ is a transversal

∴ m (∠ ABC) = m (∠ BCD) = 70° (alternate angle)

, ∵ AB = AC

∴ m (∠ ABC) = m (∠ ACB) = 70°

∴ in Δ ABC :

m (∠ A) = 180° – (2 × 70°) = 40° (the red.)

(b) ∵ $\overline{DE} // \overline{BC}$ ∴ m $\overset{\frown}{(DB)}$ = m $\overset{\frown}{(EC)}$

∴ m ($\angle BAD$) = m ($\angle EAC$)

adding m ($\angle BAC$) to both sides

∴ m ($\angle DAC$) = m ($\angle BAE$) (Q.E.D.)

4)(a) ∵ $\overline{AB}$ and $\overline{AC}$ are two tangents to the smaller circle

∴ $\overline{MD} \perp \overline{AB}$, $\overline{ME} \perp \overline{AC}$

∴ m ($\angle MDA$) = m ($\angle MEA$) = 90°

∴ From the quadrilateral ADME :

m ($\angle DME$) = 360° – (90° + 70° + 90°) = 110°

(First req.)

∵ MD = ME (two radii in the smaller circle)

∴ AB = AC (second req.)

(b) ∵ D is the midpoint of the chord $\overline{EC}$

∴ $\overline{MD} \perp \overline{EC}$ ∴ m ($\angle MDC$) = 90°

∵ $\overrightarrow{BC}$ is a tangent to the circle at C

∴ $\overline{MC} \perp \overrightarrow{BC}$ ∴ m ($\angle MCB$) = 90°

∵ $\overline{AB} // \overline{MC}$, $\overrightarrow{BC}$ is a transversal to them

∴ m ($\angle MCB$) + m ($\angle ABC$) = 180°

(two interior angle in the same side of the transversal)

∴ m ($\angle ABC$) = 180° – 90° = 90°

∴ m ($\angle ADC$) + m ($\angle ABC$) = 90° + 90° = 180°

∴ The figure ABCD is a cyclic quadrilateral.

(Q.E.D.)

6)(a) In Δ ABC : ∵ AB = AD

∴ m ($\angle ABD$) = m ($\angle ADB$) = 30°

∴ m ($\angle A$) = 180° – 2 × 30° = 120°

, ∵ m ($\angle A$) + m ($\angle C$) = 120° + 60° = 120°

∴ ABCD is a cyclic quadrilateral. (Q.E.D.)

5)(a) $\overline{MD} \perp \overline{AB}$ ∴ m ($\angle$ ADM) = 90°

, ∵ $\overline{AC}$ is a diameter in the circle M

∴ m ($\angle$ ABC) = 90°

∵ m ($\angle ADM$) = m ($\angle ABC$) = 90°

and they are corresponding angles.

∴ $\overline{MD} // \overline{BC}$ (First req.)

In Δ ABC : ∵ m ($\angle$ A) = 30° , m ($\angle ABC$) = 90°

∴ m ($\angle$ C) = 180° – (30° + 90°) = 60° (second req.)

(b) ∵ $\overline{MD} \perp \overline{AB}$ ∴ D is the midpoint of $\overline{AB}$

∵ $\overline{ME} \perp \overline{AC}$ ∴ E is the midpoint of $\overline{AC}$

∵ MD = ME ∴ AB = AC (1)

From the quadrilateral ADME

m ($\angle$ A) = 360° – (120° + 90° + 90°) = 60° (2)

From (1) and (2) :

∴ Δ ABC is an equilateral triangle. (Q.E.D.)

(b) ∵ ABCD is a cyclic quadrilateral.

∴ m ($\angle DCA$) = m ($\angle DBA$) (1)

(drawn on $\overline{AD}$ and on the same side of it

, ∵ $\overrightarrow{BD}$ bisects $\angle$ ABC

∴ m ($\angle DBC$) + m ($\angle DBA$) (2)

From (1) , (2) : ∴ m ($\angle DBC$) + m ($\angle DCA$)

∴ $\overrightarrow{CD}$ is a tangent to the circle passing through the vertices of Δ BEC (Q.E.D.)

7)(a) $\because m(\angle CMD) = 2\, m(\angle CAD)$

(central and inscribed angles subtended by $\overset{\frown}{CD}$)

$\therefore m(\angle CMD) = 2 \times 35^\circ = 70^\circ$

$\because \overline{AB} // \overline{DM}$, $\overline{BM}$ is a transversal

$\therefore m(\angle ABC) = m(\angle CMD)$(corresponding angles)

$\therefore m(\angle ABC) = 70^\circ$ (The red.)

(b) $\because m(\angle ABC) = \frac{1}{2}[m(\overset{\frown}{AC}) - m(\overset{\frown}{DE})]$

$\therefore m(\angle ABC) = \frac{1}{2}[120^\circ - 50^\circ]$

$= \frac{1}{2} \times 70^\circ = 35^\circ$

9)(a) $\because \overleftrightarrow{MN}$ is the line of centers , $\overline{AB}$ is the common chord

$\therefore \overline{AB} \perp \overline{MN}$ $\therefore m(\angle AEN) = 90^\circ$

∵The sum of the measures of the interior angles of the quadrilateral CDNE=360°

$\therefore m(\angle CDN) = 360^\circ - (55^\circ + 125^\circ + 90^\circ) = 90^\circ$

$\therefore \overline{ND} \perp \overline{CD}$

$\therefore \overline{CD}$ is a tangent to the circle N at D (Q.E.D.)

[b] ∵ MF = ME (lengths of two radii)

, XF = YE $\therefore$ MX = MY

$\because \overline{MX} \perp \overline{AB}$, $\overline{MY} \perp \overline{CD}$

$\therefore$AB = CD (Q.E.D.1)

$\because \overline{MX} \perp \overline{AB}$

$\therefore$ X is the midpoint of $\overline{AB}$ $\therefore AX = \frac{1}{2}AB$

$\because \overline{MY} \perp \overline{CD}$

$\therefore$Y is the midpoint of $\overline{CD}$ $\therefore CY = \frac{1}{2}CD$

$\because$ AB = CD $\therefore$ AX = CY

$\therefore \Delta$ AXF, Δ CYE

8)(a)In the small circle

$\because m(\angle XAB)$(the tangency angle)

$= m(\angle ADB)$(the inscribed angle) (1)

In the great circle

$\because m(\angle XAC)$(the tangency angle)

$= m(\angle AEC)$(the inscribed angle) (2)

From (1) and (2) :

$\therefore m(\angle ADB) = m(\angle AEC)$ but they are corresponding

$\therefore \overline{DB} // \overline{EC}$ (Q.E.D.)

(b) ∵ $\overline{xy}$ and $\overline{xz}$ are two tangents

$\therefore$ XY = XZ

$\therefore$ In Δ XYZ : $m(\angle XZY) = m(\angle XYZ) = \frac{180^\circ - 40^\circ}{2} = 70^\circ$

, $\because m(\angle XZY)$ (tangency) $= m(\angle YEZ)$ (inscribed)

$\therefore m(\angle YEZ) = 70^\circ$

, ∵ DEYZ is a cyclic quadrilateral

$\therefore m(\angle EYZ) + m(\angle D) = 180^\circ$

$\therefore m(\angle EYZ) = 180^\circ - 110^\circ = 70^\circ$

$\therefore m(\angle EYZ) = m(\angle YEZ) = 70^\circ$

$\therefore$ In Δ EZY : ZE = ZY

$\therefore m(\overset{\frown}{ZDE}) = m(\overset{\frown}{ZY})$

In them $\begin{cases} AX = CY \\ XF = YE \\ m(\angle AXF) = m(\angle CYE) = 90^\circ \end{cases}$

$\therefore \Delta AXF \equiv \Delta CYE$ then we deduce that $AF = CE$

(Q. E. D. 2)

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10) $\because \overline{DE} \parallel \overline{BC}$ $\therefore m(\overset{\frown}{BD}) = m(\overset{\frown}{CE})$

$\therefore m(\angle DAB) = m(\angle CAE)$

adding $m(\angle BAC)$ to both sides

$\therefore (\angle DAC) = m(\angle BAE)$ (Q.E.D.)

(b) $\because \overline{LE} \parallel \overleftrightarrow{XN}, \overleftrightarrow{XZ}$ is a transversal

$\because m(\angle XEL) = m(\angle NXZ)$ (alternate angles)

$\because m(\angle y)$ the inscribed $= m(\angle NXZ)$ of tangency

$\therefore m(\angle y) = m(\angle XEL)$

$\therefore$ the figure LYZE is a cyclic quadrilateral.

(Q.E.D.)

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11)(a) $\because \overline{AB}$ touches the circle at B $\therefore \overline{MB} \perp \overline{AB}$

$\because \overline{AC}$ touches the circle at C $\therefore \overline{MC} \perp \overline{AC}$

$\therefore (\angle ABM) + m(\angle ACM) = 90^\circ + 90^\circ = 180^\circ$

$\therefore$ the figure ABMC is a cyclic quadrilateral.

(Q.E.D. 1)

$\because \angle CMD$ is an exterior angle of it

$\therefore m(\angle CMD) = m(\angle A) = 45^\circ$

In Δ MCD: $M(\angle D) = 180^\circ - (90^\circ + 45^\circ) = 45^\circ$

$\therefore CD = MC$ (1)

$\because \overline{AC}$, $\overline{AB}$ are two tangent segments to the circle

$\therefore AC = AB$ (2)

Adding (1) and (2) : $\therefore CD + AC = MC + AB$

$\therefore AD = AB + MC$,

$\because MC = MB$ (the length of two radii)

$\therefore AD = AB + MB$ (Q. E.D.2)

(b) In Δ CBD : $\because CB = CD$

$\therefore m(\angle CBD) = m(\angle CDB) = 40^\circ$

$\therefore m(\angle C) = 180^\circ - 2 \times 40^\circ = 100^\circ$

, $\because$ ABCD is a cyclic quadrilateral.

$\therefore m(\angle A) + m(\angle C) = 180^\circ$

$\therefore m(\angle A) = 180^\circ - 100^\circ = 80^\circ$ (The req.)

---

12)(a) In the small circle

$\because m(\angle XAB)$ (the tangency angle)

$= m(\angle ADB)$ (the inscribed angle) (1)

In the great circle

$\because m(\angle XAC)$ (the tangency angle)

$= m(\angle AEC)$ (the inscribed angle) (2)

From (1) and (2) :

$\therefore m(\angle ADB) = m(\angle AEC)$ but they are corresponding.

$\therefore \overline{DB} \parallel \overline{EC}$ (Q.E.D.)

(b) $\because AB = CD$ $\therefore m(\overset{\frown}{AB}) = m(\overset{\frown}{CD})$

Subtracting $m(\overset{\frown}{BD})$ from both sides

$\therefore m(\overset{\frown}{AD}) = m(\overset{\frown}{BC})$ $\therefore m(\angle C) = m(\angle A)$

$\therefore \Delta$ ACE is isosceles (Q.E.D.)

13)(a) ∵ $\overleftrightarrow{MN}$ is the line of centers, $\overline{AB}$ is the common chord

$\therefore \overline{AB} \perp \overline{MN}$ $\therefore m(\angle AEN) = 90°$

∵The sum of the measures of the interior angles of the quadrilateral CDNE=360°

$\therefore m(\angle CDN) = 360° - (55° + 125° + 90°) = 90°$

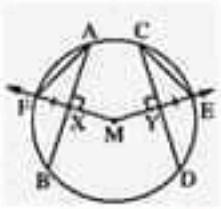
$\therefore \overrightarrow{ND} \perp \overrightarrow{CD}$

$\therefore \overrightarrow{CD}$ is a tangent to the circle N at D (Q.E.D.)

[b] ∵ MF = ME (lengths of two radii)

, XF = YE

$\therefore MX = MY$



∵ $\overline{MX} \perp \overline{AB}$, $\overline{MY} \perp \overline{CD}$

$\therefore AB = CD$ (Q.E.D.1)

∵ $\overline{MX} \perp \overline{AB}$

$\therefore$ X is the midpoint of $\overline{AB}$ $\therefore AX = \frac{1}{2}AB$

∵ $\overline{MY} \perp \overline{CD}$

$\therefore$Y is the midpoint of $\overline{CD}$ $\therefore CY = \frac{1}{2}CD$

∵ AB = CD

$\therefore AX = CY$

$\therefore \Delta AXF, \Delta CYE$

In them $\begin{cases} AX = CY \\ XF = YE \\ m(\angle AXF) = m(\angle CYE) = 90° \end{cases}$

$\therefore \Delta AXF \equiv \Delta CYE$ then we deduce that AF = CE

(Q. E. D. 2)

14)(a) ∵ $m(\angle E) = \frac{1}{2}[m(\overset{\frown}{BD}) - m(\overset{\frown}{AO})]$

$\therefore m(\angle E) = \frac{1}{2}m(\overset{\frown}{BD}) - \frac{1}{2}(\overset{\frown}{AO})$

, ∵ $m(\angle DCB) = \frac{1}{2}m(\overset{\frown}{BD})$

$\therefore m(\angle E) = m(\angle DCB) - \frac{1}{2}m(\overset{\frown}{AO})$

$\therefore m(\angle DCB) = m(\angle E) + \frac{1}{2}m(\overset{\frown}{AO})$

$\therefore m(\angle DCB) > m(\angle E)$ (Q. E. D.)

(b) ∵ ∠ ABE is an exterior angle of the cyclic quadrilateral ABCD

$\therefore m(\angle d) = m(\angle ABE) = 100°$

In Δ ACD : $m(\angle ACD) = 180° - (100° + 40°) = 40°$

$\therefore m(\angle ACD) = m(\angle CAD)$

$\therefore$ CD=AD $\therefore m(\overset{\frown}{CD}) = m(\overset{\frown}{AD})$ (Q.E.D.)

15)(a) an axis of symmetry.

(b) ∵ $\overline{DE} // \overline{BC}$ $\therefore m(\overset{\frown}{BD}) = m(\overset{\frown}{CE})$

$\therefore m(\angle DAB) = m(\angle CAE)$

adding m (∠ BAC) to both sides

$\therefore (\angle DAC) = m(\angle BAE)$ (Q. E. D.)

16)(a)

∵ $\overline{LE} // \overline{XN}$, $\overline{XZ}$ is a transversal

∵ m (∠ XEL) = m (∠ NXZ) (alternate angles)
∵ m (∠y) the inscribed = m(∠ NXZ)of tangency
$\therefore m(\angle y) = m(\angle XEL)$

$\therefore$ the figure LYZE is a cyclic quadrilateral

(Q. E. D.)

17)(a)

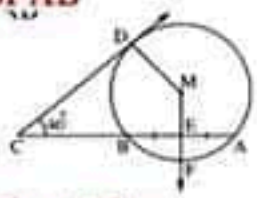
$\because \overline{CD}$ is a tangent to the circle

$\therefore \overline{MD} \perp \overline{CD}$ $\quad \therefore (\angle MDC) = 90^\circ$

$\because$ E is the midpoint of $\overline{AB}$

$\therefore \overline{ME} \perp \overline{AB}$

$\therefore m(\angle MEC) = 90^\circ$



$\therefore m(\angle DMF)$

$= 360^\circ - (40^\circ + 90^\circ + 90^\circ)$

$= 360^\circ - 220^\circ - 140^\circ$

$\because AE = \frac{1}{2}AB = 8$ cm

$\because AM = r = 10$ cm

In ΔAEM : $\because m(\angle AEM) = 90^\circ$

$\therefore (ME)^2 = (AM)^2 - (AE)^2 = 100 - 64 = 36$

$\therefore ME = \sqrt{36} = 6$ cm

$\therefore FE = MF - ME = 10 - 6$cm. (second req.)

(b) $\therefore \overline{MN}$ is the line of centres

$\overline{AB}$ is the common chord of the two circles

$\therefore \overline{MN} \perp \overline{AB}$

$\because$ X is the midpoint of $\overline{AC}$

$\therefore \overline{MX} \perp \overline{AC}$

$\because AB = AC$ $\quad \therefore MX = MD$

$\because MY = ME$ (lengths of two radii)

$\therefore MY - MX = ME - MD$

$\therefore XY = DE$ (Q.E.D)

---

18)

$\because \overline{AB}$ is a diameter of the circle M

$\therefore m(\angle ADB) = 90^\circ$

In ΔABD: $\because m(\angle ABD) = 40^\circ$

$\therefore m(\angle A) = 180^\circ - (90^\circ + 40^\circ) = 50^\circ$

$\because$ ABCD is a cyclic quadrilateral

$\therefore m(\angle C) + m(\angle A) = 180^\circ$

$\therefore m(\angle C) = 180^\circ - 50^\circ = 130^\circ$ (The req)

---

19) $\because \overline{DE} // \overline{BC}$

$\therefore m(\overset{\frown}{BD}) = m(\overset{\frown}{CE})$

adding $m(\angle BAC)$ to both sides

$\therefore m(\angle DAC) = m(\angle BAE)$ (Q. E. D)

---

20)(a)

$\because m(\angle DMC) = 2\, m(\angle CAD)$

(central and inscribed angles subtended by $\overset{\frown}{CD}$)

$\therefore m(\angle DMC) = 2 \times 30^\circ = 60^\circ$

$\because \overline{AB} // \overline{DM}$. $\overline{BC}$ is a transbersal

$\because m(\angle B) = m(\angle DMC)$

$= 60^\circ$ (corresponding angles)

$\because \overline{BC}$ is a diameter of circle M

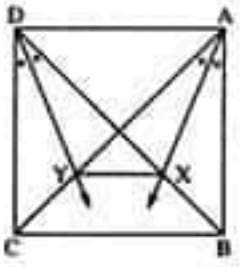
$\therefore m(\angle BAC) = 90^\circ$

$\therefore$ In ΔABC: $m(\angle ACB) = 180^\circ - (90^\circ + 60^\circ)$

$= 30^\circ$ (The req)

(b)

$\because$ ABCD is a square. $\overline{AC}$ and $\overline{BD}$ are two diagonals of the square



$\therefore m(\angle BAC) = m(\angle BDC)$

$\therefore \frac{1}{2} m(\angle BAC)$

$= \frac{1}{2} m(\angle BDC)$

$\therefore m(\angle XAY)$

$= m(\angle XDY)$ but they are drawn On $\overline{XY}$ and on one side of it

$\therefore$ The figure AXYD is a cyclic quadrilateral

(Q. E. D. 1)

$\because m(\angle DXY) = m(\angle DAY) = 45^\circ$

(They are drawn on $\overline{DY}$ and on one side of it)

(Q. E. D. 2)

21)(a)

∵ $\overline{XY}, \overline{XZ}$ are tangentsegments to the circle at Y and Z

∴ XY = XZ

∴ $m(\angle XYZ) = m(\angle XZY) = \frac{180^\circ - 80^\circ}{2} = 50^\circ$

∴ m (∠ ZEY) (the inscribed angle)

= m (∠ ZYX) (the tangency angle) = 50°

∵ The figure LEYZ. is a cyclic quadrilateral

∴ $m(\angle ZYE) = 180^\circ - 130^\circ = 50^\circ$

∴ $m(\angle ZEY) = m(\angle ZYE) = 50^\circ$

∴ ZE = ZY (Q. E. D. 1)

∵ $m(\angle XZY) = m(\angle ZYE) = 50^0$

but they are alternate angles

∴ $\overline{XZ} // \overline{YE}$ (Q. E. D. 2)

∵ In Δ ZYE: $m(\angle EZY) = 180^\circ - 2 \times 50^\circ$

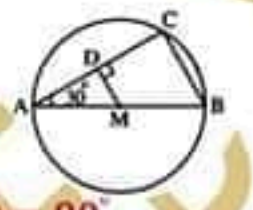
$= 80^\circ$

∴ $m(\angle EZY) = m(\angle X) = 80^\circ$

∴ $\overline{ZE}$ is a tangent to the circle passing through The points X. Y and Z (Q. E. D. 3)

---

22)(a)



∵ $\overline{AB}$ is a diameter

∴ $m(\angle C) = 90^\circ$.

∵ $\overline{MD} \perp \overline{AC}$

∴ $m(\angle ADM) = m(\angle C) = 90^\circ$

and they are corresponding angles

∴ $\overline{DM} // \overline{BC}$ (Q. E. D. 1)

In Δ ABC which is right – anlged at C

∴ $m(\angle A) = 30^\circ$

∴ $BC = \frac{1}{2} AB$

= radius length (Q. E. D. 2)

(b) ∵ MF = ME (Two radii) (1)

, XF = YE (given) (2)

Subtracting (2) from (1) :

∴ MX = MY, ∵ $\overline{MX} \perp \overline{AB}, \overline{MY} \perp \overline{CD}$

∴ AB = CD (Q.E.D.1)

∴ $\frac{1}{2} AB = \frac{1}{2} CD$ ∴ AX = CY (Q.E.D.1)

∴ In ΔΔ AXF , CYE :

$\begin{cases} AX = CY \\ XF = YE \\ m(\angle CYE) = m(\angle AXF) = 90^\circ \end{cases}$

∴ Δ AXF ≡ Δ CYE ∴ AF = CE (Q. E. D. 2)

---

23)(a) Theoretical.

(b)∵ (XZ) and (XY) are two tangents ∴ XZ=XY

∴ $m(\angle XZY) = \frac{(180^\circ - 40^\circ}{2} = 70^\circ$

∴ m (∠ ZEY) the inscribed

= m (∠ XZY) of tangency

∴m (∠ ZEY) = 70° (1)

,∵ DEYZ is a cyclic quadrilateral

∴ m (∠ EYZ) = 180° - 110° = 70° (2)

From (1) and (2):

∴ m $(\overset{\frown}{ZE})$ = m $(\overset{\frown}{ZY})$ (Two arcs subtended by two equal inscribed angles in measure)

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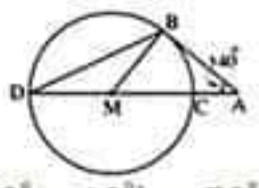
24)(a)∵ $\overline{AB}$ is tangent to the circle M at B



∴ $\overline{MB} \perp \overline{AB}$

∴ From Δ ABM:

$m(\angle BMA) = 180^\circ - (90^\circ + 40^\circ) = 50^\circ$

∴ $m(\angle D) = \frac{1}{2} m(\angle BMC) = 25^\circ$

(inscribed and central angles subtended by $\overset{\frown}{BC}$)

(b) In Δ AEC: ∵ EA = EC

∴ m (∠ BAC) = m(∠DCA) (1)

,∵ $m(\angle BAD) = m(\angle DCB)$

(inscribed angles subtended by $\overset{\frown}{BD}$) (2)

,adding (1) and (2)

∴ $m(\angle CAD) = m(\angle ACB)$ (Q. E. D)

25)(a)

∵ D is the midpoint of the chord $\overline{AC}$

∴ $\overline{MD} \perp \overline{AC}$.

∵ $\overline{BE}$ is tangent to the circle M at B

∴ $\overline{MB} \perp \overline{BE}$

∴ $m(\angle ADE) = m(\angle EBA) = 90^{\circ}$

and they aer draw on $\overline{AE}$ and on one side of it

∴ ADBE is a cyclic quadrilateral (Q. E. D. (1))

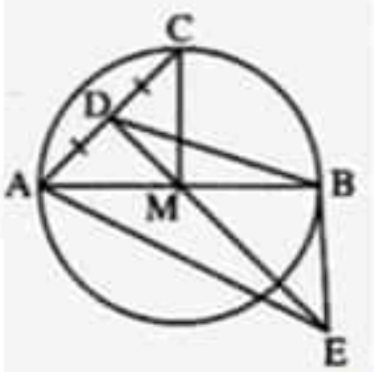
∴ $m(\angle BED) = m(\angle BAD)$

(are drawn on $\overline{BD}$ and on one side of it)

∵ $m(\angle CMB) = 2\, m(\angle CAB)$

(central and inscribed angles subtended by $\overset{\frown}{BC}$)

∴ $m(\angle CMB) = 2m(\angle MEB)$ (Q. E. D. 2)



Timss Problrms For prep 3

MR/Ahmed Shamekh

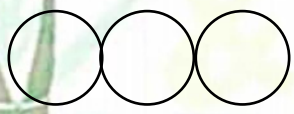
1 The acute angle supplements ..... angle.

(a) an acute (b) an obtuse (c) a right (d) a reflex

2 The number of diagonals of the hexagon equals ..... (Souhag)

(a) 3 (b) 6 (c) 9 (d) 12

3 The number of axes of symmetry of the opposite shape is .....



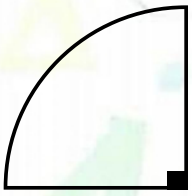
(Qairo)

(a) 1 (b) 2 (c) 3 (d) 4

4 The ratio between the area of a square region of side length L cm. and the area of a square region of side length 2L cm. is ..... (E-Fayoum)

(a) 1 : 2 (b) L : 4 (c) 1 : 4 (d) 4 : 1

5 The opposite figure represents a quarter of a circle of radius length 2 cm., then the perimeter of the figure in centimetres is .....



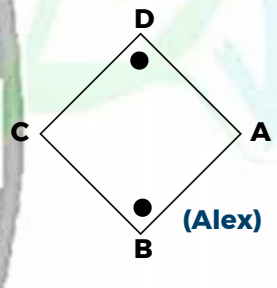
(El-Menia)

(a) 2π (b) 5π (c) π + 4 (d) 4π + 4

6 The area of a square whose side length is an integer may be ..... cm^2 (Giza)

(a) 600 (b) 900 (c) 800 (d) 700

7 In the opposite figure :
If m (∠A) + m (∠C) = 140° , m (∠B) = m (∠D) ,
then m (∠B) = ...



(Alex)

(a) 50 ° (b) 55 ° (c) 110 ° (d) 220 °

8 If the side length of a square is $2\sqrt{2}$ cm., then its area equals its ..... angle. (El-Menia)

(a) 4 cm^2 (b) 8 cm^2 (c) $4\sqrt{2}$ cm^2 (d) $8\sqrt{2}$ cm^2

9 If the lengths of two sides of a triangle are 3 cm. and 7 cm., then which of the following can not be the length of the third side ? (El-Beheira)

(a) 7 cm (b) 8 cm (c) 9 cm (d) 3 cm

10 A circle, its area is 64 π cm^2, then its circumference equals ..... (Matroh)

(a) 8 cm (b) 8π cm (c) 16π cm (d) 32π cm

11 If the height of a triangle equals half the length of its base, and the length of its base is L cm., then the area of this triangle = ... (Alex)

a $\frac{1}{2}$ L cm² b $\frac{1}{2}$ L² cm² c $\frac{1}{4}$ L cm² d $\frac{1}{4}$ L² cm²

12 If the perimeter of a square equals (3 X - 4) cm. and the area of this square equals 25 cm², then X = ... (El-Beheira)

a 5 b 6 c 8 d 20

13 If the area of one face of a cube equals 9 cm², then the volume of this cube equals ..... (Giza)

a 9 cm³ b 27 cm³ c 36 cm³ d 81 cm³

14 In the parallelogram ABCD, if ∠A is acute, then ∠C is ..... (Luxor)

a acute. b obtuse. c right. d reflex.

15 The number of diagonals of the pentagon equals ..... (Ismailia)

a 3 b 5 c 7 d 9

16 The image of the point (-1 , 3) by the translation (4 , -2) is ..... (Matroh)

a (3 , -1) b (3 , 1) c (5 , 1) d (5 , -5)

17 The measure of the angle of the regular octagon equals ..... (Souhag)

a 108 ° b 120 ° c 135 ° d 144 °

18 A rectangle, its length is 4 cm. and its width is 3 cm. , then the length of its diagonal equals ..... (Qairo)

a 14 cm b 12 cm c 7 cm d 5 cm

19 The ratio between the side length of a rhombus and its perimeter equals ..... (El-Menia)

a 1 : 1 b 1 : 2 c 1 : 4 d 4 : 1

20 A square is of area 144 cm², then its perimeter = ... (Damietta)

a 12 b 48 c 288 d 576

21 A rectangle, its length is 6 cm. and its perimeter is 16 cm., then its area is ..... (Qairo)

a 10 b 8 c 12 d 16

22 The supplementary of the angle whose measure is 30°, is an angle of measure .....

(E-Fayoum)

a 30 ° b 60 ° c 120 ° d 150 °

23 The area of the shaded part from the area of the figure = ...

(El-Beheira)

a $\frac{1}{8}$ b $\frac{1}{2}$

c $\frac{3}{8}$ d $\frac{3}{4}$

24 If X is an angle, then m (∠X) + m (reflex ∠X) = ... (Matroh)

a two right angles. b three right angles.

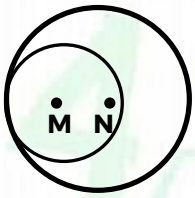
c five right angles. d four right angles.

25 A square its side length is a whole number, then its perimeter can be .....

(El-Gharbia)

a 33 cm b 44 cm c 55 cm d 66 cm

26 The number of axes of symmetry of the opposite figure is .....



(Alex)

a 1 b 2

c 3 d an infinite number

27 The number of diagonals of the hexagon is ..... (Ismailia)

a 6 b 3 c 12 d 9

28 The two angles of base of an isosceles triangle are..... (Suez)

a congruent b supplementary

c vertically oppositeangles. d corresponding

29 The measure of an exterior angle of an equilateral triangle is .....

(Damietta)

a 60 ° b 150 ° c 120 ° d 30 °

30 The number of axes of symmetry of the isosceles triangle equals .....

(Qairo)

a 0 b 1 c 2 d 3

31 The triangle whose side lengths are 5 cm., 12 cm. and 13 cm., its area = ... cm^2 (Souhag)

a 30 b 32.5 c 78 d 144

32 In any triangle, the sum of the lengths of any two sides is ..... the length of the third side. (El-Gharbia)

a greater than b smaller than c equal to d half

33 The point of concurrence of the medians of the triangle divides the median in the ratio of ..... from the base. (E-Fayoum)

a 1 : 3 b 2 : 1 c 3 : 1 d 1 : 2

34 The sum of the measures of the accumulative angles at a point equals ..... (El-Menia)

a 90 ° b 180 ° c 270 ° d 360 °

35 If ABCD is a square, then m (∠CAB) = ... (El-Beheira)

a 90 ° b 45 ° c 60 ° d 30 °

36 If the lengths of the diagonals of a rhombus are 6 cm., 10 cm. , then its area equals ..... cm^2 (Luxor)

a 30 b 60 c 15 d 10

37 The image of the point (-4 , 5) by the translation (2 , -3) is ..... (El-Menia)

a (-2 , -2) b (2 , -2) c (2 , 2) d (-2 , 2)

38 The image of the point (-2 , 5) by reflection in X-axis is ..... (Alex)

a (-2 , -5) b (2 , 5) c (2 , -5) d (5 , -2)

39 The quadrilateral whose diagonals are equal in length and perpendicular is the ..... (Giza)

a square b rhombus

c rectangle d parallelogram

40 The volume of the cuboid whose dimensions are $\sqrt{2}$, $\sqrt{3}$, 6 centimetres equals ..... cm^3 (Qairo)

a $2\sqrt{6}$ b $3\sqrt{6}$ c $3\sqrt{2}$ d $6\sqrt{6}$

41 If 3 , 7 , L are lengths of sides of a triangle, then L may be equal to ..... (El-Menia)

a 3 b 4 c 7 d 10

42 Δ ABC is a triangle, (∠B) = 3 m (∠A) = 90°, then m (∠C) = ... (Matroh)

a 30 ° b 45 ° c 60 ° d 90 °

43 ABC is a triangle , if m (∠B) > m (∠C), then ..... (Ismailia)

a AC-AB < 0 b AC-AB ≤ 0 c BC ≤ AB d AC-AB > 0

44 The circumference of the circle with diameter length 14 cm. is ..... cm. (where $\pi = \frac{22}{7}$) (El-Beheira)

a 7 b 22 c 44 d 14

45 If m (∠X) = m (∠Y), ∠X, ∠Y are complementary , then m (∠X) = ... (Souhag)

a 90 ° b 60 ° c 45 ° d 30 °

46 If $\overleftrightarrow{XY}$ is the axis of symmetry of $\overline{AB}$, then XA ..... XB (E-Fayoum)

a < b > c = d ⊥

47 ABCD is a parallelogram in which m (∠A) + m (∠C) = 200° , then m (∠B) = ... (Alex)

a 50 ° b 80 ° c 100 ° d 160 °

48 If ABCD is a parallelogram, then AB + CD = ... (Damietta)

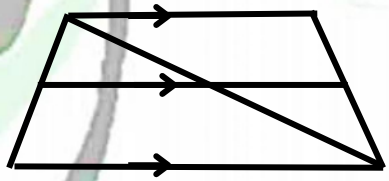
a 2AC b 2BC c 2BD d 2CD

49 If $L_1 // L_2$, $L_3 \perp L_1$, $L_4 \perp L_2$, then ..... (El-Menia)

a $L_2 // L_3$ b $L_1 // L_4$ c $L_3 // L_4$ d $L_3 // L_4$

50 In the opposite figure :

The number of trapeziums = ...



(El-Gharbia)

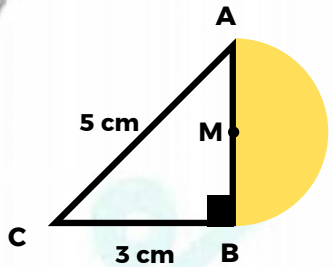
a 2 b 3

c 4 d 5

51 In the opposite figure :

$\overline{AB}$ is a diameter of a circle,

then the surface area of the shaded shape = ... cm^2



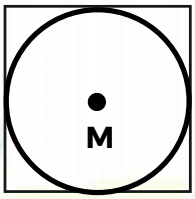
(Alex)

a 4 π b 16 π

c 2 π d 9 π

52 **In the opposite figure :**

If the side length of the square = 10 cm. , then the area of the circle = ... cm^2.



(Giza)

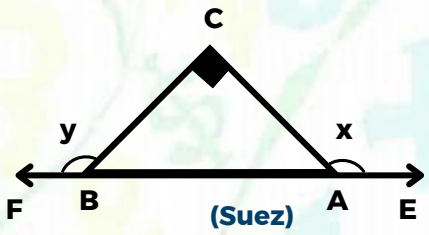
a 100 π b 25 π

c 50 π d 40 π

53 **In the opposite figure :**

If A ∈ $\overline{EF}$, B ∈ $\overline{EF}$, m (∠C) = 90°

, then X + y = ...



(Suez)

a 90 ° b 180 °

c 270 ° d 360 °

54 **The corresponding angles of the two similar polygons are ..... in measure.** (Qairo)

a equal b different c proportional d alternate

55 **The medians of a triangle meet at the same point which divides each in the ratio ..... from the vertex.** (El-Menia)

a 1 : 2 b 2 : 1 c 1 : 3 d 3 : 2

56 **If the projection of a line segment on a straight line is a point, then the line segment ..... the straight line.** (Matroh)

a // b ⊥ c ∈ d ⊂

57 **ABC is a right-angled triangle at B where AB = 6 cm., BC = 8 cm., then its area = ... cm^2** (El-Gharbia)

a 48 b 14 c 24 d 7

58 **A rectangle has a length of 8 cm., and a surface area of 16 cm^2, then its width = ... cm.** (Qairo)

a 48 b 2 c 3 d 64

59 **The length of the side opposite to the angle of measure 30° in the right-angled triangle equals ..... the length of the hypotenuse.** (Ismailia)

a $\frac{1}{2}$ b $\frac{\sqrt{3}}{2}$ c $\sqrt{2}$ d 7

60 The image of the point (2 , 3) by rotation R (O , 180°) is the point ..... (Luxor)

a (2 , 3) b (-2 , 3) c (2 , -3) d (-2 , -3)

61 If the side length of a rhombus is L cm., then its perimeter = ... cm (El-Beheira)

a L^2 b $2L^2$ c 4L d $2\sqrt{2L}$

62 The measure of the interior angle of the regular hexagon = ... (Souhag)

a 60 ° b 108 ° c 120 ° d 135 °

63 If M is a circle of radius length r cm., then the length of the semicircle ..... cm. (Alex)

a $2\pi r$ b $\frac{1}{4}\pi r$ c $\frac{1}{2}\pi r$ d πr

64 A square is of perimeter 20 cm., then its area = ... cm^2 (Matroh)

a 20 b 25 c 50 d 100

65 The two diagonals are equal in length and not perpendicular in the ..... (El-Menia)

a square b rhombus

c rectangle d parallelogram

66 Δ ABC is a right-angled triangle at C, then the two angles A and B are ..... (E-Fayoum)

a supplementary. b complementary.

c adjacent. d vertically opposite angles.

67 Two parallel lines to a third are ..... (El-Menia)

a perpendicular b parallel

c intersecting d skew

68 The number of symmetry axes of the square is ..... (Qairo)

a 1 b 2 c 3 d 4

69 The numbers 5 , 4 and ..... can be side lengths of a triangle. (Suez)

a 8 b 9 c 10 d 12

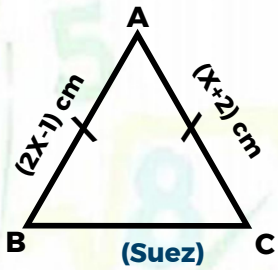
70 Δ XYZ is a right-angled triangle at Y, then XZ ..... YZ (El-Gharbia)

a < b > c = d is twice

71 **In the opposite figure :**

If AB = AC , AB = (2 X-1) cm. and AC = (X+2) cm. ,

then X = ...



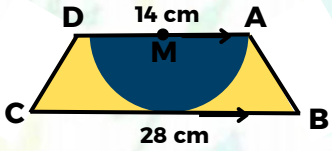
(Suez)

a 3 b 5

c 11 d 14

72 **In the opposite figure :**

ABCD is a trapezium in which $\overline{AD}$ // $\overline{BC}$ and $\overline{AD}$ is a diameter of circle M, then the area of the shaded region = ...



(Luxor)

a 70 cm^2 b 147 cm^2

c 170 cm^2 d 224 cm^2

73 **ABC is a triangle having one symmetric axis and its side lengths are 10 , 5 and X cm. , then X = ... cm.** (Suez)

a 5 b 8 c 10 d 12

74 **The distance between the point (7,4) and y-axis equals ..... length unit.** (Ismailia)

a -7 b -4 c 4 d 7

75 **The number of altitudes of the isosceles triangle equals .....** (Damietta)

a zero b 1 c 2 d 3

76 **If the two adjacent angles are complementary, then the outer sides of them are .....** (El-Gharbia)

a parallel. b including an acute angle.

c perpendicular. d collinear.

77 **ABCD is a parallelogram, m (∠A) + m (∠C) = 200°, then m (∠B) = ...** (Luxor)

a 50 ° b 80 ° c 100 ° d 160 °

78 **The number of axes of symmetry of the semicircle equals .....** (El-Menia)

a 0 b 1 c 2 d an infinite number.

79 **A triangle has only one axis of symmetry and two side lengths of its sides are 4 cm. ,8 cm., then the length of its third side is ..... cm** (E-Fayoum)

a 5 b 12 c 4 d 8

80 If the two vertically opposite angles are supplementary , then the measure of each one is ..... (Matroh)

a 45 ° b 180 ° c 90 ° d 60 °

81 If $\overline{AB} = \overline{XY}$, then $\frac{3\ AB}{5\ XY}$ = ... (Souhag)

a 1 b 0.6 c zero d 1.7

82 The number of axes of symmetry of the equilateral triangle is ..... (Luxor)

a zero b 1 c 2 d 3

83 If the point A lies on the axis of symmetry of $\overline{XY}$, then $\overline{AX}$ ..... $\overline{AY}$ (Damietta)

a // b ⊥ c = d ≡

84 If Δ ABC = Δ XYZ, then $\overline{AB}$ ..... $\overline{XY}$ (El-Menia)

a < b = c ≡ d >

85 If ABCD is a rhombus, m (∠A) + m (∠C) = 140°, then m (∠A) = ... (El-Beheira)

a 70 ° b 40 ° c 110 ° d 220 °

86 The angle whose measure is more than 90° and less than 180° is ..... angle. (El-Menia)

a an obtuse b an acute c a right d a straight

87 The acute angle is complemented by an angle ..... (Qairo)

a acute. b right. c obtuse. d reflex.

88 The sum of the measures of the interior angles of a pentagon equals ..... (Souhag)

a 36 ° b 72 ° c 108 ° d 540 °

89 The angle whose measure is 89° 59' is ..... (Ismailia)

a acute. b right. c obtuse. d reflex.

90 The perimeter of the square whose surface area is 100 cm^2 equals ..... cm. (El-Monofia)

a 10 b 20 c 40 d 50

91 If the lengths 3,7, L are lengths of sides of a triangle, then L can be equal to ..... (El-Gharbia)

a 3 b 7 c 4 d 10

92 The length of any side of a triangle ..... the sum of lengths of the other two sides. (Luxor)

a > b ≥ c < d =

93 In a parallelogram, the diagonals are ..... (Matroh)

a perpendicular. b equal in length.

c bisecting each other. d perpendicular and equal in length.

94 A circle has a surface area of 4π cm^2, then its radius length is ..... cm (El-Menia)

a 2 b 4 c 2π d 4π

95 The two perpendicular straight lines to a third in the same plane are ..... (Alex)

a parallel. b intersecting.

c perpendicular. d intersecting on perpendicular.

96 The number of the axes of symmetry of the circle equals ..... (Suez)

a 1 b 2 c 3 d an infinite number.

97 All ..... are similar.

a the squares b the triangles

c the rectangles d the parallelograms

98 The bisectors of two adjacent supplementary angles. ..... (Alex)

a are perpendicular. b are parallel.

c are coincident. d have an acute angle between them.

99 If m (reflex $\angle A$) = 3 m ($\angle A$), then m (reflex $\angle A$) = ...° (Giza)

a 360 b 120 c 90 d 270

100 The number of the axes of symmetry of the scalene triangle equals ..... (Qairo)

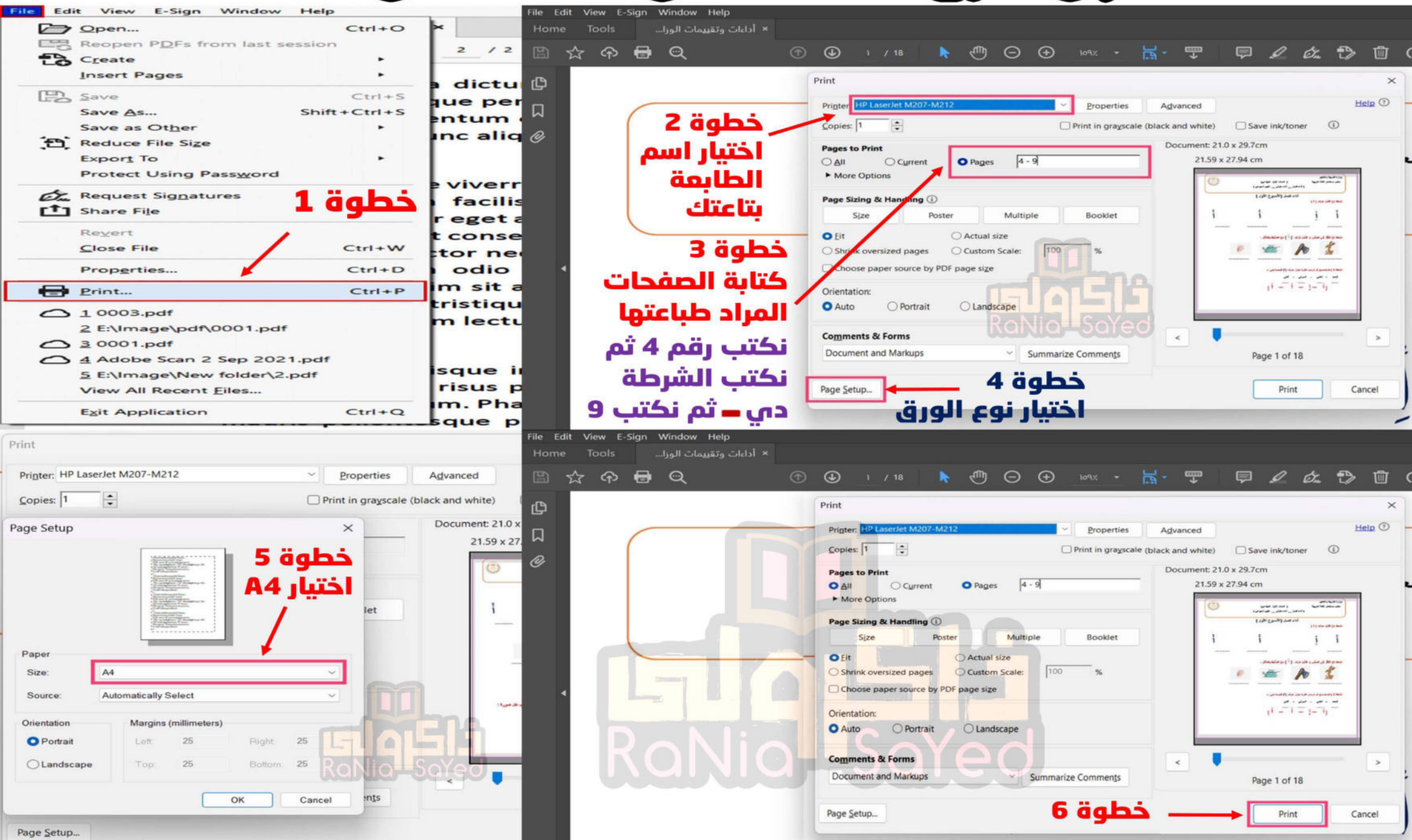
a 3 b zero c 2 d 1

Answers of accumulative basic skills

1	b	21	c	41	c	61	c	81	b
2	c	22	d	42	c	62	c	82	d
3	b	23	b	43	d	63	d	83	d
4	c	24	d	44	c	64	b	84	c
5	c	25	b	45	c	65	c	85	a
6	b	26	a	46	c	66	b	86	a
7	c	27	d	47	b	67	b	87	a
8	b	28	a	48	d	68	d	88	d
9	d	29	c	49	c	69	a	89	a
10	c	30	b	50	d	70	b	90	c
11	d	31	a	51	c	71	a	91	b
12	c	32	a	52	b	72	b	92	a
13	b	33	d	53	c	73	c	93	c
14	a	34	d	54	a	74	d	94	a
15	b	35	b	55	b	75	d	95	a
16	b	36	a	56	c	76	c	96	d
17	c	37	d	57	c	77	b	97	a
18	d	38	a	58	b	78	b	98	a
19	c	39	a	59	a	79	d	99	d
20	b	40	d	60	d	80	c	100	b

كيفية طباعة صفحات معينة من ملف معين

مثلا ازاى نطبع الصفحات من صفحة 4 الى صفحة 9



المراجعة رقم (2)

الترم الثانى

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Q1: CHOOSE THE CORRECT ANSWER

1 The number of common tangents of two touching externally circles is ..... .

(a) 3 (b) 2 (c) 1 (d) 0

2 The number of tangents can be drawn from a point lying on a circle is ..... .

(a) zero (b) 1 (c) 4 (d) infinite

3 The length of arc opposite to central angle of measure 120°, in a circle of radius r is ..... .

(a) $\frac{1}{3}\pi r$ (b) πr (c) $\frac{2}{3}\pi r$ (d) $3\pi r$

4 The circumference of a circle is 36 cm, then the measure of an arc of it with length 6 cm is ..... .

(a) 30° (b) 60° (c) 120° (d) 90°

5 ABCD is a quadrilateral inscribed in a circle, m (∠A) = 70°. then m $(\overset{\frown}{BAD})$ = ... °.

(a) 35 (b) 55 (c) 140 (d) 220

6 M and N are two circles, their radii lengths are 9 cm. and 6 cm. , the two circles are distant if MN ..... 15 cm

(a) > (b) < (c) = (d) ≥

7 An arc in a circle, its length = $\frac{1}{3}\pi r$, then it is opposite to a central angle of measure ..... .

(a) 30° (b) 60° (c) 120° (d) 240°

8 AB is a diameter of the circle whose centre is the origin point , if A = (2 , 0), then B = ...

(a) (2 , 2) (b) (0 , −2)
(c) (−2 , 0) (d) (−2 , 2)

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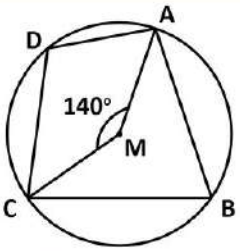
9 In the opposite figure :
In the circle M, if m (∠AMC) = 140°
, then m (∠ADC) = ...



(a) 40° (b) 70° (c) 110° (d) 140°

10 If MA, MB are two perpendicular radii in a circle M, Area of Δ AMB = 18 cm², then radius of circle M = ... cm

(a) 4 (b) 6 (c) 9 (d) 3

11 ABCD is a cyclic quadrilateral. If m (∠ACB) = 80°, then m (∠ADB) = ...

(a) 40° (b) 80° (c) 100° (d) 160°

12 The inscribed angle which is drawn in a semicircle is ..... .

(a) acute (b) obtuse (c) straight (d) right

13 The number of common tangents of two circles which are one circle inside the other without touching is ..... .

(a) 3 (b) 2 (c) 1 (d) 0

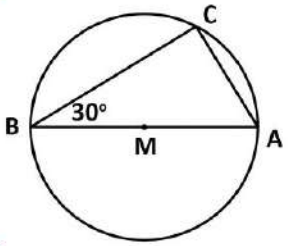
14 The point of concurrence of the medians of the triangle divides each median by the ratio ..... from the base.

(a) 1 : 3 (b) 2 : 1 (c) 3 : 1 (d) 1 : 2

15 The chord whose length is 8 cm. in a circle of radius length 5 cm.
is at ..... cm. distant from its centre.

(a) 3 (b) 4 (c) 5 (d) 10

16 In the opposite figure:
$\overline{AB}$ is a diameter of the circle M
,m(∠B) = 30° , AC = 6 cm.
, then AB = ... cm .



(a) 3 (b) 6
(c) 9 (d) 12

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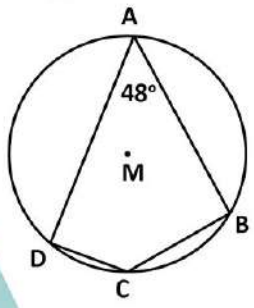
17 The number of common tangents of two distant circles is ..... .

(a) 3 (b) 1 (c) 4 (d) 2

18 In the opposite figure:
If $m(\angle A) = 48^\circ$
, then m $(\overset{\frown}{BD})$ the major = ...



(a) 260° (b) 265°
(c) 264° (d) 262°

19 The radius length of the circle whose centre is the origin point and passes through the point (3 , 4) equals ..... length unit.

(a) 3 (b) 4 (c) 5 (d) 7

20 The ratio between the measure of the inscribed angle and the measure of the central angle subtended by the same arc is ..... .

(a) 2 : 1 (b) 1 : 2 (c) 2 : 2 (d) 2 : 3

21 A circle of circumference 20 π cm. r then its area is ..... π cm^2.

(a) 10 (b) 100 (c) 200 (d) 400

22 M, N, L are three touching externally circles two by two, their radii 5, 6 and 4 cm, then perimeter of Δ MNL = ... cm.

(a) 15 (b) 30 (c) 40 (d) 60

23 ABC is an equilateral triangle inscribed in a circle, then m $(\overset{\frown}{AB})$ = ...

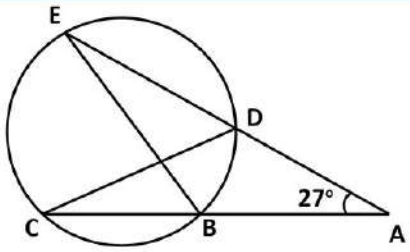
(a) 30° (b) 60° (c) 120° (d) 240°

24 If M is a circle of diameter length 6 cm, A is a point on the circle, then MA = ...

(a) 3 cm (b) 4 cm (c) 5 cm (d) 6 cm

25 The length of the arc opposite to a central angle of measure 30° in a circle of circumference 36 cm. equals ..... cm

(a) 18 (b) 3
(c) 9 (d) 4



26 In the opposite figure:
AD intersects the circle at D and E,
AB intersects, it at B and C
If m (∠A) =27°, AB = BE , then m(∠CDE) = ...

ⓐ 13.5° ⓑ 54° ⓒ 27° ⓓ 36°

27 Area of triangle whose base length 10 cm and height length 6 cm is ..... cm^2

ⓐ 16 ⓑ 30 ⓒ 32 ⓓ 60

28 The measure of the central angle ..... the measure of the inscribed angle subtended by the same arc.

ⓐ half ⓑ twice ⓒ triple ⓓ equal

29 The length of the arc that is opposite to a right inscribed angle in a circle whose circumference is 44 cm. equals ..... cm.

ⓐ 22 ⓑ 11 ⓒ $\frac{22}{7}$ ⓓ $\frac{44}{7}$

30 In the cyclic quadrilateral ABCD, if m (∠A) = 3 m (∠C), then m(∠A) = ...

ⓐ 45° ⓑ 90° ⓒ 120° ⓓ 135°

31 If M , N are two touching circles intemally, their radii lengths are 5 cm, 9 cm. , then MN = ... cm.

ⓐ 14 ⓑ 4 ⓒ 5 ⓓ 9

32 A circle of circumference 6 π cm. and the straight line L is distant from its centre by 3 cm. then the straight line L is ..... .

ⓐ a diameter ⓑ a secant ⓒ a tangent ⓓ outside the circle

33 The surface of the circle M ∩ the surface of the circle N = {A} and the radius length of one of them is 3 cm. and MN = 8 cm, then the radius length of the other circle equals ..... cm

ⓐ 5 ⓑ 6
ⓒ 11 ⓓ 16

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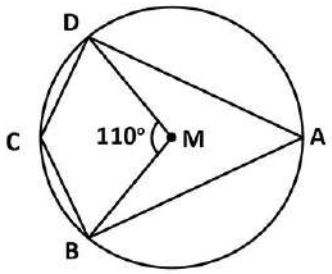
34 In the opposite figure:
If M is the centre of the circle
m (∠BMD) = 110°
, then m(∠C) = ...



(a) 70° (b) 90°
(c) 125° (d) 135°

35 The number of circles which pass through three non-collinear points is ..... .

(a) zero (b) 1 (c) 2 (d) 3

36 ABCD is a cyclic quadrilateral in which: m (∠A) = m (∠C), then m (∠ A) = ...

(a) 60° (b) 90° (c) 120° (d) 180°

37 A circle M of radius length r cm, then the length of the semicircle = ... cm

(a) $2\pi r$ (b) $\frac{1}{4}\pi r$ (c) $\frac{1}{2}\pi r$ (d) πr

38 If M , N are two touching circles intemally, their radii lengths are 5 cm, 9 cm.
, then MN = ... cm.

(a) 14 (b) 4 (c) 5 (d) 9

39 M and N are two circles touching externally, the radius length of the circle M = 4 cm, if MN = 7 cm, then the circumference of the circle N equals ..... .

(a) 4π (b) 6π (c) 7π (d) π

40 The number of circles passing through three collinear points is ..... .

(a) 0 (b) 1 (c) 3 (d) infinite number

41 The centre of a circle is the origin, its radius length is 7 cm, which of the following points is not on the circle ?

(a) (0 , 7) (b) (0 , −7) (c) (7 , 0) (d) (2 , 2)

42 The measure of the central angle ..... the measure of the inscribed angle subtended by the same arc.

(a) half (b) twice
(c) triple (d) equal

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43 If ABCD is a cyclic quadrilateral, then $m(\angle A) + m(\angle C) - 80^\circ =$ .....

(a) 60° (b) 80° (c) 100° (d) 180°

44 It is impossible to draw a circle passing through the vertices of ..... .

(a) a triangle (b) a rhombus (c) a square (d) a rectangle

45 If ABCD is a square drawn in a circle, then m (AB) = ...

(a) 60° (b) 90° (c) 120° (d) 180°

46 If the straight line L is a tangent to the circle M of diameter length 8 cm. , then the distance between L and the centre of the circle equals ..... cm

(a) 3 (b) 4 (c) 6 (d) 8

47 The measure of the inscribed angle drawn in a semicircle equals ..... °

(a) 360 (b) 180 (c) 90 (d) 120

48 The length of the arc that is opposite to a right inscribed angle in a circle whose circumference is 44 cm. equals ..... cm.

(a) 22 (b) 11 (c) $\frac{22}{7}$ (d) $\frac{44}{7}$

49 M , N are two touching externally circles, the lengths of their radii are 7 cm, 3 cm, then MN = ... cm.

(a) 4 (b) 12 (c) 6 (d) 10

50 The circumference of a circle M is 12π cm, the point A is in the plane of the circle. If MA = 5 cm, then the point A lies ..... the circle.

(a) outside (b) inside (c) on (d) at the centre of

51 A circle of circumference 6π cm. and the straight line L is distant from its centre by 3 cm. then the straight line L is ..... .

(a) a diameter (b) a secant
(c) a tangent (d) outside the circle

52 The number of common tangents of two circles touching internally equals ..... .

(a) 3 (b) 2 (c) 1 (d) 0

53 A chord of length 6 cm, is drawn in a circle of diameter length 10 cm, then the distance between the chord and the centre of the circle is ..... .

(a) 3 cm (b) 4 cm (c) 5 cm (d) 2 cm

54 If the diameter length of the circle M is 7 cm, MA = 4 cm, then A lies ..... .

(a) inside the circle (b) on the circle (c) outside the circle (d) otherwise

55 The inscribed angle subtended by a minor arc in the circle is ..... .

(a) acute (b) obtuse (c) straight (d) right

56 The two tangent-segments drawn from a point outside a circle are ..... .

(a) parallel (b) perpendicular (c) equal in length (d) not equal in length

57 The number of the common tangents of the two touching externaly circles is .....

(a) zero (b) 1 (c) 2 (d) 3

58 Two circles, the lengths of their radii are 5 cm, 8 cm. are touching, then the distance between their centres $\in$ ..... .

(a) $]3 , 13[$ (b) $]13 , \infty[$ (c) $]0 , 3[$ (d) $\{3 , 13\}$

59 The number of symmetry axes of a circle is ..... .

(a) zero (b) 1 (c) 2 (d) infinite number

60 The line of centres of two intersecting circles is perpendicular to ..... and bisects it

(a) the diameter (b) the chord
(c) the tangent (d) the common chord

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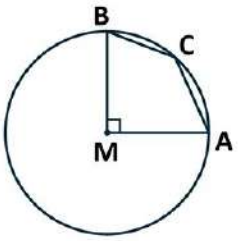
61 M is a circle, AM ⊥ MB,
then m(∠ACB) = ...



(a) 45° (b) 90° (c) 145° (d) 135°

62 A line (L) is a tangent to the circle with, diameter 8 cm, then L is at ..... cm from its center.

(a) 3 (b) 4 (c) 6 (d) 8

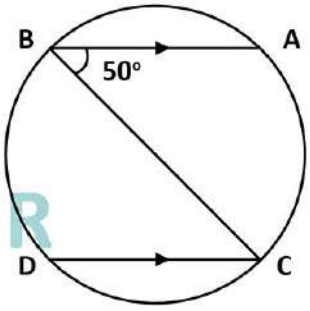
63 ABCD is a cyclic quadrilateral, m(∠A) = 3 m(∠C), then m(∠A) = ...

(a) 45° (b) 90° (c) 120° (d) 135°

64 The angle of tangency is an angle contained between .....

(a) two chords (b) two tangents
(c) a chord and a tangent (d) a chord and a diameter

65 In the opposite figure:
BA // CD, m(∠B) = 50°
,then m $(\overset{\frown}{AC})$ + m $(\overset{\frown}{BD})$ = ...



(a) 50° (b) 200°
(c) 150° (d) 180°

66 The center of the circumcircle of a triangle is the point of intersection of .....

(a) the bisectors of its interior angles. (b) the bisectors of its exterior angles.
(c) the axes of symmetry of its sides. (d) its altitudes.

66 ..... is a cyclic quadrilateral.

(a) Rhombus (b) Parallelogram
(c) Trapezoid (d) Rectangle

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Q1: CHOOSE THE CORRECT ANSWER ACCUMULATIVE

1 The complementary angle for the angle measure 60° is an angle of measure ....

(a) 120° (b) 0° (c) 30° (d) 90°

2 The measure of an interior angle of regular hexagon is ..... .

(a) 60° (b) 108° (c) 120° (d) 135°

3 Lengths of two adjacent sides of a parallelogram are 7 cm, 5 cm, the longer height is 6 cm, then its area = ...

(a) 35 (b) 42 (c) 30 (d) 18

4 The sum of measures of two complementary angles is .....

(a) 45° (b) 90° (c) 180° (d) 360°

5 In Δ ABC ,if $(AB)^2 + (BC)^2 = (AC)^2$, then ∠ B is ..... .

(a) obtuse (b) right (c) acute (d) straight

6 The number of altitudes of the isosceles triangle is ..... .

(a) zero (b) 1 (c) 3 (d) infinite

7 The number of the diagonals of the pentagon is ..... .

(a) 4 (b) 5 (c) 6 (d) 7

8 The number of axes of symmetry of half a circle equals ..... .

(a) 0 (b) 1 (c) 2 (d) infinite number

9 The length of the side opposite to the angle of measure 30° in the right-angled triangle equals ..... the length of the hypotenuse

(a) half (b) third
(c) double (d) fourth

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10 ..... = 8 cm

(a) $\overrightarrow{XY}$ (b) $\overleftrightarrow{XY}$ (c) $\overline{XY}$ (d) XY

11 The sum of the measures of the accumulative angles at a point = ...

(a) 90° (b) 180° (c) 270° (d) 360°

12 ABCD is a parallelogram, If m(∠A) = 80°, Then m(∠C) = ...

(a) 40° (b) 80° (c) 100° (d) 160°

13 The square whose area is 100 cm², its diagonal length equal ..... cm

(a) $2\sqrt{10}$ (b) 10 (c) $10\sqrt{2}$ (d) 50

14 The distance between the point (−4 , −3) and the x-axis equals ..... length unit

(a) -3 (b) 3 (c) 4 (d) -4

15 In Δ ABC, AB + BC − AC ..... Zero

(a) > (b) = (c) < (d) ≥

16 The concurrence point of medians of triangle divides each median in the ratio ..... : ..... from vertex

(a) 1 : 1 (b) 1 : 2 (c) 2 : 1 (d) 3 : 2

17 The number of axes of symmetry of the isosceles triangle equals ..... .

(a) 3 (b) 2 (c) 3 (d) 1

18 ABCD is a parallelogram, m(∠A) + m(∠C) = 200°. Then m(∠B) = ...

(a) 50° (b) 80° (c) 100° (d) 120°

19 The sum of measures of exterior angles of a hexagon is ..... .

(a) 360° (b) 540°
(c) 720° (d) 120°

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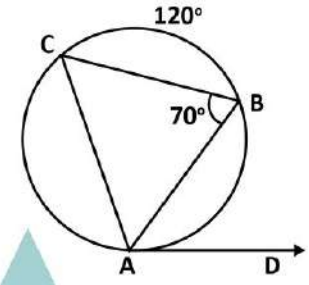
Q2: ANSWER THE FOLLOWING

1 In the opposite figure:
AD is a tangent to the circle at A
,m (∠ B) =70°, m (BC) = 120°
Find: m (∠DAB)



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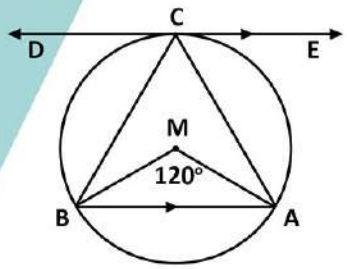
2 In the opposite figure:
a tangent to the circle M at C ,
CD // AB , m (∠AMB) = 120°
First : Find with proof m (∠ACB)
Second : Prove that Δ ABC is an equilateral triangle.



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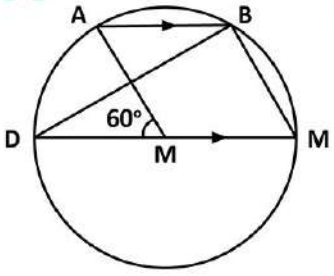
3 In the opposite figure :
$\overline{DC}$ is a diameter in the circle M,
$\overline{DC}$ // $\overline{AB}$,
m (∠AMD) = 60°
Find with proof : m (∠ABD) and m (∠BCD)



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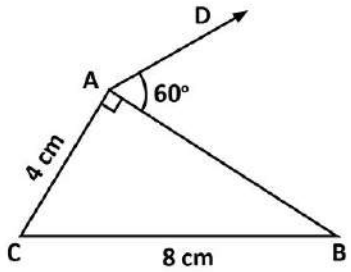
4 Using the givens in the figure:
Prove that: AD is a tangent to the circle passing through the vertices of Δ ABC



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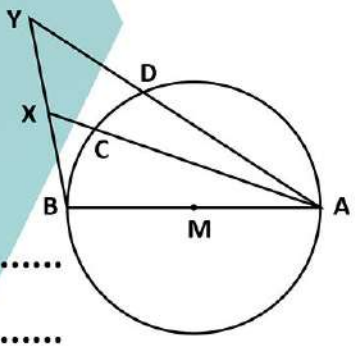
5 In the opposite figure:
AB is a diameter in a circle M,
YB is tangent
Prove that: DCXY is cyclic quadrilateral



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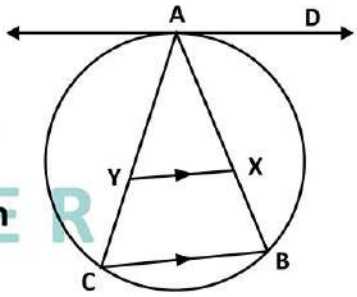
6 ABC is inscribed in a circle
AD is a tangent to the circle at A
X ∈ AB, Y ∈ AC where XY // BC
Prove that: AD is a tangent to the circle passing through the points A, X, Y



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7 Draw the right angled triangle ABC at B where AB = 4 cm. and BC = 3 cm. then draw the circumcircle of this triangle.
Where does the centre of the cilcle lie with respect to the sides of this triangle ?

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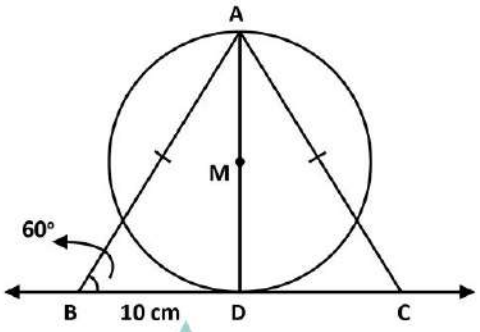
8 In the opposite figure:
CB is a tangent to the circle M ,
AB = AC , BD = 10 cm
m (∠CBA) = 60°
Find with proof: The perimeter of Δ ABC



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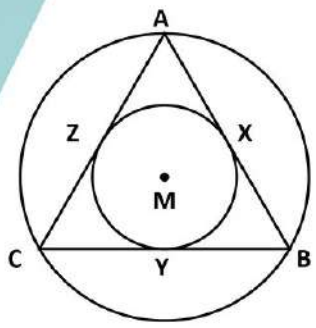
9 In the opposite figure:
Two concentric circles, Δ ABC is drawn in which all vertices lie on greater cirlce and its sides touch the smaller circle X, Y, Z
Prove that: Δ ABC is an equilateral triangle.



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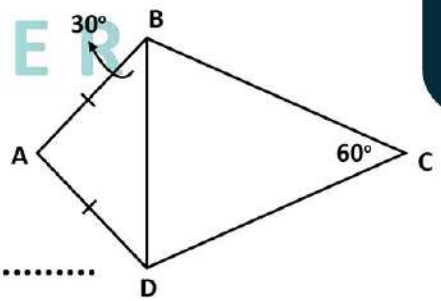
10 In the opposite figure:
ABCD is a quadrilateral in which AB = AD :
m (∠ ABD) = 30°, m(∠ C) = 60°
Prove that: ABCD is a cyclic quadrilateral.



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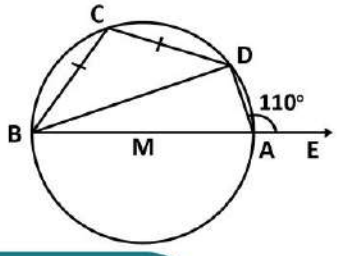
11 In the opposite figure:
AB is a diameter of the circle M
,E ∈ BA, CD = CB. m (∠ DAE) = 110°.
Find: m(∠ ADC)



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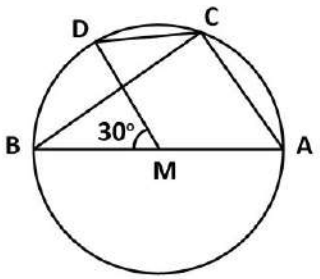
12 In the opposite figure:
AB is diameter in circle M, m (∠BMD) = 30°,
Find: 1] m (∠BCD) 2] m (∠ACD)



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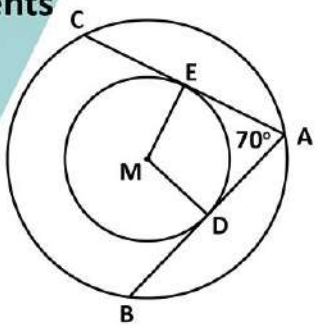
13 In the opposite figure:
Two concentric circles at M, AB, AC are two tangent-segments to the smaller circle at D, E respectively, m (∠ BAC) = 70°
Prove that: 1] AB = AC 2] Find: m (∠DME)



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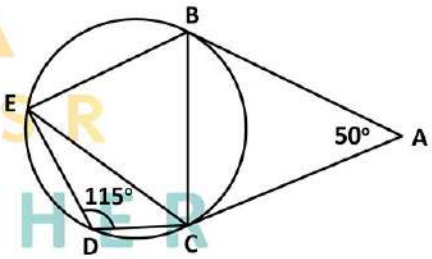
14 In the opposite figure:
AB, AC are two tangent-segments to the circle at B , C, m (∠A) =50°, m (∠D) = 115°
Prove that: 1] BC bisects ∠ABE
2] CB = CE



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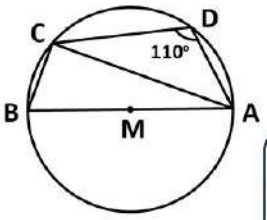
15 In the opposite figure:
AB is a diameter in the circle M
, m (∠CDA) = 110°
Find: m (CB)



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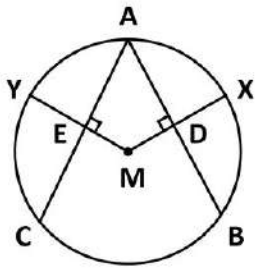
16 In the opposite figure :
AB = AC, $\overline{MD} \perp \overline{AB}$
$\overline{ME} \perp \overline{AC}$
Prove that: XD = YE



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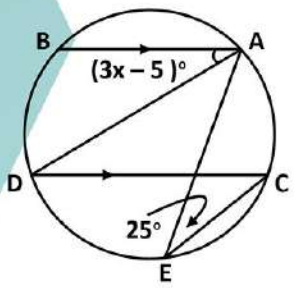
17 In the opposite figure:
AB , CD are two parallel chords in a circle:
m (∠BAD) = (3x – 5)°
, m(∠AEC) = 25°
Find: The value of X



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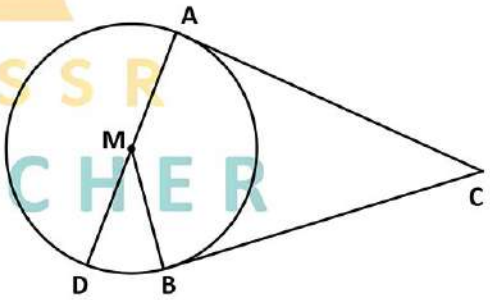
18 In the opposite figure:
AD is a diameter in the circle M
, CA, CB are two tangents to
the circle M at A , B
Prove that: m (∠DMB) = m (∠ACB)



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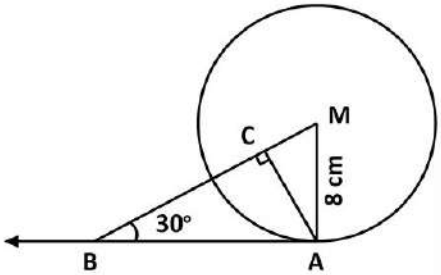
19 In the opposite figure:
AB is a tangent to the circle M at A,
MA = 8 cm.
, m (∠ABM) = 30° and $\overline{AC} \perp \overline{MB}$
Find : The length of each of $\overline{AB}$ and $\overline{AC}$



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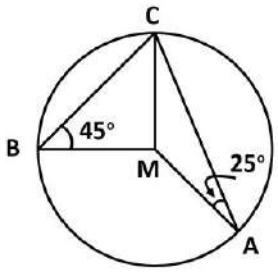
20 In The opposite figure:
A circle of centre M, m ($\angle$MAC) = 25° ,
m ($\angle$ MBC) = 45°
Find with proof: m ($\angle$ AMB)



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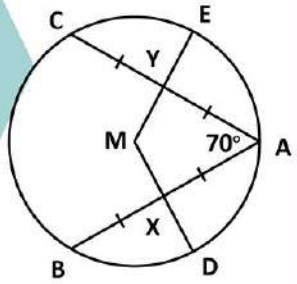
21 In the opposite figure:
$\overline{AB}$, $\overline{AC}$ chords equal in length in the circle M , X is the midpoint of $\overline{AB}$, Y is the midpoint of $\overline{AC}$ and m ($\angle$BAC) = 70°
Find: m($\angle$ DME)
Prove that: XD = YE



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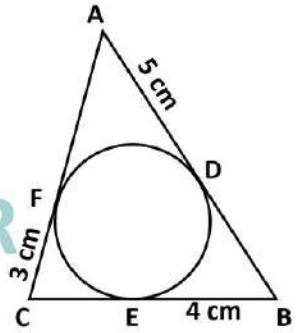
22 In the opposite figure:
A circle is drawn touching the sides of the triangle ABC, AB, BC, AC at D, E, F, AD = 5 cm,
BE = 4 cm, CF = 3 cm.
Find the perimeter of Δ ABC



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23 Find the length of the arc which represents $\frac{3}{4}$ the length of the circle whose diameter length is 14 cm (where $\pi = \frac{22}{7}$)

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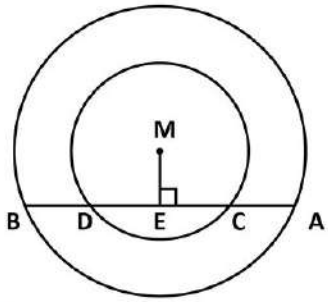
24 In the opposite figure :
Two concentric circles with centre M,
AB is a chord of the greater circle
and intersects the smaller circle at C, D
and ME ⊥ AB, Prove that : AC = BD



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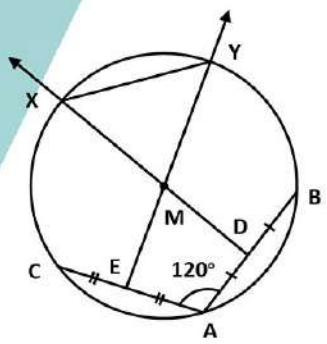
25 Using the givens of the figure :
Prove that : The triangle XYM is an equilateral triangle.



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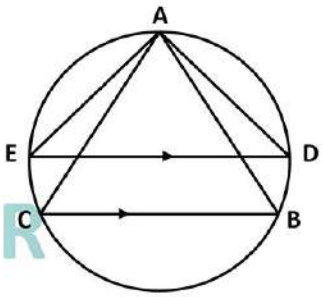
26 In the opposite figure:
Δ ABC is inscribed in
a circle and DE // BC
Prove that: m (∠DAC) = m (∠BAE)



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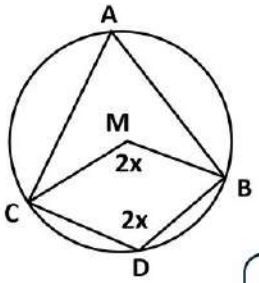
27 In the opposite figure:
ABDC is a cyclic quadrilateral ,
m (∠BMC) = m (∠BDC) = 2 x° ,
Find with proof m (∠A) in degrees .



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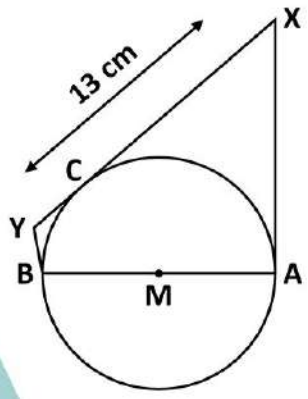
28 **In the opposite figure:**
AB is a diameter in a circle M whose radius length is 5 cm.
If C ∈ the circle M, a tangent to the circle is drawn at point C and cuts the two tangents of the circle at A, B in X, Y where XY = 13 cm.
Find: The area of the figure AXYB.



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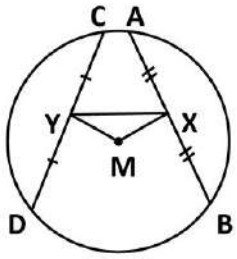
29 **In the opposite figure :**
In the circle of centre M, AB = CD,
m (∠XMY) = 130°, X and Y are the midpoints of $\overline{AB}$ and $\overline{CD}$
Find with proof: m (∠MXY)



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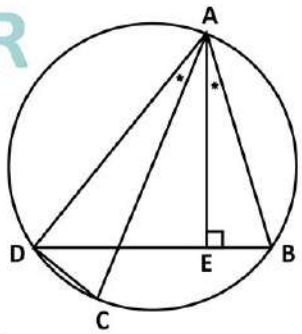
30 **In the opposite figure :**
m (∠BAE) = m (∠DAC) ,
AE ⊥ BD
Prove that:
AC is a diameter in the circle.



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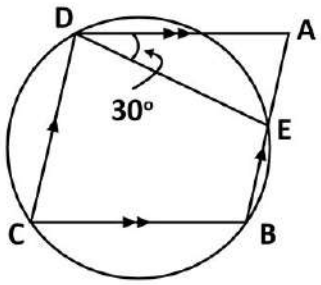
31 In the opposite figure:
ABCD is a parallelogram, and the circle passing through points B, C, and D cuts AB at E.
The measure of $\angle ADE$ is given as 30°.
Find: m($\angle B$)



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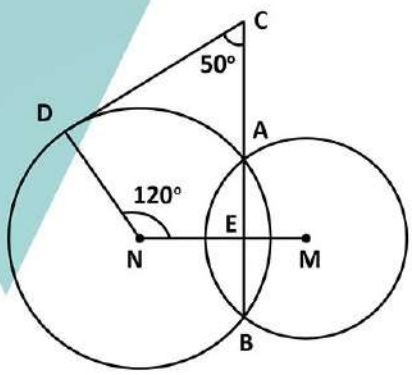
32 In the opposite figure:
M and N are two intersecting circles at A and B, MN ∩ AB = {B}, C ∈ BA , D ∈ the circle N, m ($\angle$ MND) = 125°
, m ($\angle$ BCD) = 55°
Prove that: CD is a tangent to the circle N at D



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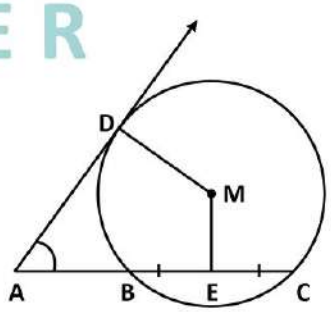
33 In the opposite figure :
$\overrightarrow{AD}$ is a tangent to the circle M
, $\overrightarrow{AC}$ intersects the circle M at B and C
, m($\angle$ A) = 56°, E is the midpoint of $\overline{BC}$
Find: m ($\angle$ DME)



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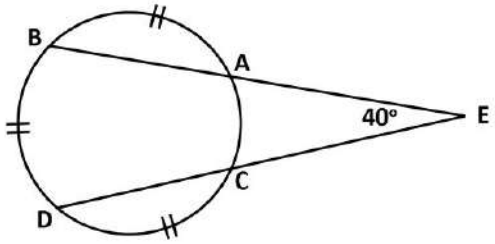
34 In the opposite figure:
$m(\overset{\frown}{AB}) = m(\overset{\frown}{DB}) = m(\overset{\frown}{DC})$
$m(\angle C) = 40^\circ$,
Find $m(\overset{\frown}{AC})$



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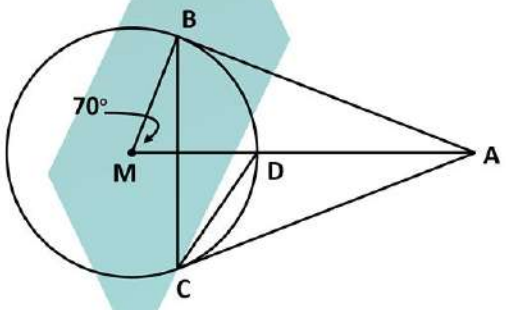
35 In the opposite figure:
AB, AC are two tangent-segments drawn from point A, $m(\angle AMB) = 70^\circ$
Find: 1] $m(\angle ABC)$
2] $m(\angle ACD)$



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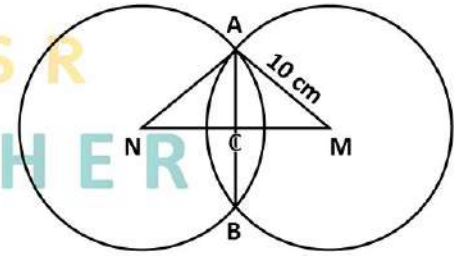
36 In the opposite figure :
Two congruent circles M and N are intersecting at A and B, If MA = 10 cm, AB = 12 cm.
Find by proof: The length of $\overline{MN}$



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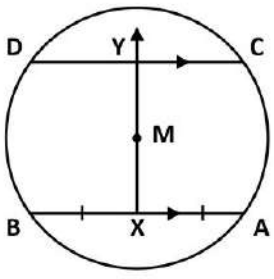
37 In the opposite figure:
M is a circle , AB // CD,
X is the midpoint of AB
and XM is drawn to cut CD at Y
Prove that : Y is the midpoint of CD



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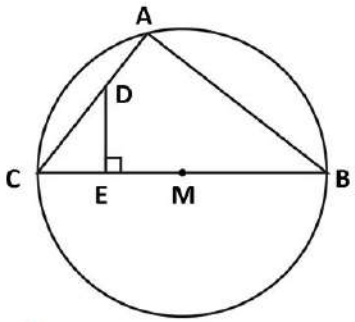
38 **In the opposite figure:**

BC is a diameter in the circle M, DE ⊥ BC

Prove that: 1] ABED is a cyclic quadrilateral

2] $m(\angle EDC) = \frac{1}{2} m(\overset{\frown}{AC})$



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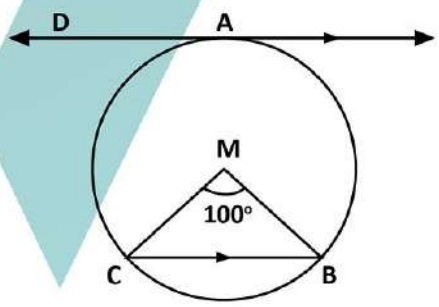
39 **In the opposite figure:**

AD is a tangent to the circle M at A

, AD // BC, $m(\angle M) = 100°$

Find: $m(\overset{\frown}{AB})$



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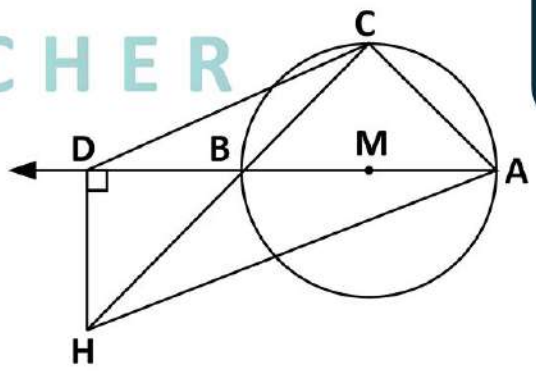
40 **In the opposite figure:**

AB is a diameter in circle M, D ∈ AB

, D ∉ AB, DH ⊥ AB

, C ∈ $\overset{\frown}{AB}$, CB ∩ DH = {H}

Prove that: ACDH is a cyclic quadrilateral



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المراجعة رقم (3)

الترم الثانى

بسم الله الرحمن الرحيم

Question (1) Choose the correct answer.

1) ……. is the set of points of the plane which are a constant distance from a fixed point in the same plane.

A) Circle B) Square C) Rectangle D) Rhombus

2) …… is a line segment whose endpoints are the center of the circle and any point in this circle.

A) Chord B) Diameter C) Radius D) Arc

3) …… is a line segment whose endpoints are any two points on the circle.

A) Chord B) Diameter C) Radius D) Arc

4) …… is a line segment whose endpoints are any two points on the circle passing through its center.

A) Chord B) Diameter C) Radius D) Arc

5) Circumference of the circle = ……

A) $\pi^2 r$ B) $2\pi r$ C) πr^2 D) $[\pi r]^2$

6) Area of the circle = ……..

A) $\pi^2 r$ B) $2\pi r$ C) πr^2 D) $[\pi r]^2$

7) Diameter is a …….. passing through the center of the circle.

A) line B) ray C) chord D) tangent

8) The longest chord in the circle is called a ……..

A) radius B) diameter C) chord D) tangent

9) Any circle have …… of axis of symmetry.

A) 0 B) 1 C) 2 D) infinite number

10) Any half of a circle have …… of axis of symmetry.

A) 0 B) 1 C) 2 D) infinite number

11) The straight line passing through the center of the circle and a midpoint of the chord is …….. to it.

A) perpendicular B) equal C) Parallel D) bisect

12) The straight line passing through the center of the circle and perpendicular to a chord, Then this line …….. this chord.

A) perpendicular B) equal C) Parallel D) bisect

13) The straight line which is perpendicular to a chord and bisect it must be passing through ……..

A) point on circle B) radius C) diameter D) center

14) The circumference of the circle whose radius length is 7 cm = …… cm.
$\pi = \frac{22}{7}$

A) 7 B) 22 C) 44 D) 154

15) The circumference of the circle whose radius length is 14 cm = ……. cm.
$\pi = \frac{22}{7}$

A) 88 B) 166 C) 44 D) 616

16) The circumference of the circle whose diameter length is 14 cm = ……cm.
$\pi = \frac{22}{7}$

A) 7 B) 22 C) 44 D) 154

17) The circumference of the circle whose longest chord length is 42 cm

= ……..cm. $\pi = \frac{22}{7}$

A) 21 B) 132 C) 154 D) 264

18) A chord with length 8 cm is drawn in circle with diameter 10 cm, Then it's distance from the center = …….. cm.

A) 2 B) 3 C) 4 D) 5

19) M is a center of the circle and A is a point, If MA > r then the point a is …….. The circle.

A) inside B) outside C) on

20) M is a center of the circle and A is a point, If MA < r then the point a is …….. The circle.

A) inside B) outside C) on

21) M is a center of the circle and A is a point, If MA = r then the point a is …….. The circle.

A) inside B) outside C) on

22) If the point A lies on the circle M whose diameter length is 8 cm, Then

MA = …….. cm.

A) 2 B) 4 C) 6 D) 8

23) A circle M with circumference 12 π cm and the point A lies on its plane, If MA = 5 cm, Then the point A lies …….. circle.

A) inside B) outside C) on

24) If L is a straight line in the same plane with the circle M and AM is the perpendicular distance between L and circle M, If AM > r then L is …….. the circle.

A) lies outside B) tangent to C) secant to

25) If L is a straight line in the same plane with the circle M and AM is the perpendicular distance between L and circle M, If AM = r then L is …… the circle.

A) lies outside **B) tangent to** **C) secant to**

26) If L is a straight line in the same plane with the circle M and AM is the perpendicular distance between L and circle M, If AM < r then L is …… the circle.

A) lies outside **B) tangent to** **C) secant to**

27) The tangent to the circle with diameter 6 cm is at a distance of …….. cm.

A) 2 **B) 3** **C) 6** **D) 12**

28) If the diameter length of the circle is 10 cm and the straight line L is at 11 cm, Then L is …… the circle.

A) lies outside **B) tangent to** **C) secant to**

29) If the diameter length of the circle is 10 cm and the straight line L is at 10 cm, Then L is …… the circle.

A) lies outside **B) tangent to** **C) secant to**

30) If the diameter length of the circle is 10 cm and the straight line L is at 6 cm, Then L is …… the circle.

A) lies outside **B) tangent to** **C) secant to**

31) The tangent of the circle is ……. To the radius drawn from the point of tangency.

A) perpendicular **B) coincident** **C) parallel**

32) The two tangent are drawn from two endpoints of a diameter of a circle are ……

A) perpendicular **B) coincident** **C) parallel**

33) If A belongs to the surface of the circle M whose diameter length is 10 cm, Then MA ∈ ……..

A)]0 , ∞[B)]0 , 5[C) [5 , ∞[D) [0 , 5]

34) If A lies outside of the circle M whose diameter length is 8 cm, Then MA ∈ ……..

A)]0 , ∞[B)]0 , 4[C)]4 , ∞[D) [0 , 4]

35) M and N are two circles and their radius lengths are r_1 and r_2, where $r_1 > r_2$

If $MN > r_1 + r_2$, Then the two circles are ……

A) touching internally B) touching externally C) intersecting D) distant

36) M and N are two circles and their radius lengths are r_1 and r_2, where $r_1 > r_2$

If $MN = r_1 + r_2$, Then the two circles are ……

A) touching internally B) touching externally C) intersecting D) distant

37) M and N are two circles and their radius lengths are r_1 and r_2, where $r_1 > r_2$

If $MN = r_1 - r_2$, Then the two circles are ……

A) touching internally B) touching externally C) intersecting D) distant

38) M and N are two circles and their radius lengths are r_1 and r_2, where $r_1 > r_2$

If $r_1 - r_2 < MN < r_1 + r_2$, Then the two circles are ……

A) touching internally B) touching externally C) intersecting D) distant

39) M and N are two circles and their radius lengths are r_1 and r_2, where $r_1 > r_2$

If $r_1 - r_2 > MN$, Then the two circles are ……

A) one inside the other B) concentric C) intersecting D) distant

40) M and N are two circles and their radius lengths are r_1 and r_2, where $r_1 > r_2$

If MN = 0, Then the two circles are ……

A) one inside the other B) concentric C) intersecting D) distant

41) M and N are two circles and their radius lengths are r_1 and r_2, where r_1 = 5 cm, r_2 = 3 cm and MN = 2 cm, Then the two circles are ……

A) touching internally B) touching externally C) intersecting D) distant

42) M and N are two circles and their radius lengths are r_1 and r_2, where r_1 = 5 cm, r_2 = 3 cm and MN = 8 cm, Then the two circles are ……

A) touching internally B) touching externally C) intersecting D) distant

43) M and N are two circles and their radius lengths are r_1 and r_2, where r_1 = 5 cm, r_2 = 3 cm and MN = 5 cm, Then the two circles are ……

A) touching internally B) touching externally C) intersecting D) distant

44) M and N are two circles and their radius lengths are r_1 and r_2, where r_1 = 5 cm, r_2 = 3 cm and MN = 10 cm, Then the two circles are ……

A) touching internally B) touching externally C) intersecting D) distant

45) M and N are two circles and their radius lengths are r_1 and r_2, where r_1 = 5 cm, r_2 = 3 cm and MN = 0 cm, Then the two circles are ……

A) one inside the other B) concentric C) intersecting D) distant

46) M and N are two circles and their radius lengths are r_1 and r_2, where r_1 = 5 cm, r_2 = 3 cm and MN = 1 cm, Then the two circles are ……

A) one inside the other B) concentric C) intersecting D) distant

47) If the surface of the circle M ∩ the surface of the circle N = {A}, Then the two circles are ……

A) touching internally B) touching externally C) intersecting D) distant

48) If the surface of the circle M ∩ the surface of the circle N = {A , B}, Then the two circles are ……

A) touching internally B) touching externally C) intersecting D) distant

47) If the surface of the circle M ∩ the surface of the circle N = ϕ, Then the two circles are ……

A) touching internally B) touching externally C) intersecting D) distant

48) The line of centers of two touching circles passes through the point of tangency is …… to the common tangent.

A) perpendicular B) coincident C) parallel

49) The line of centers of two intersecting circles is ……. to the common chord and bisect it.

A) perpendicular B) coincident C) parallel

50) You can draw …… of circles passing through one point.

A) 0 B) 1 C) 2 D) infinite number

51) You can draw …… of circles passing through two points.

A) 0 B) 1 C) 2 D) infinite number

50) If AB is a line segment and the required is drawing a circle passing the two points A and B and r > $\frac{1}{2}$AB, Then you can draw ……. circle.

A) 0 B) 1 C) 2 D) infinite number

51) If AB is a line segment and the required is drawing a circle passing the two points A and B and r < $\frac{1}{2}$AB, Then you can draw ……. circle.

A) 0 B) 1 C) 2 D) infinite number

52) If AB is a line segment and the required is drawing a circle passing the two points A and B and r = $\frac{1}{2}$AB, Then you can draw …….. circle.

A) 0 B) 1 C) 2 D) infinite number

53) You can draw …….. of circles passing through three collinear points.

A) 0 B) 1 C) 2 D) infinite number

54) You can draw …….. of circles passing through three non-collinear points.

A) 0 B) 1 C) 2 D) infinite number

55) If L_1 and L_2 are two chords on the same circle and S_1 and S_2 are the distance between the chords and the center of the circle respectively If $L_1 > L_2$, Then

S_1 …….. S_2.

A) > B) < C) =

56) If L_1 and L_2 are two chords on the same circle and S_1 and S_2 are the distance between the chords and the center of the circle respectively If $L_1 = L_2$, Then

S_1 …….. S_2.

A) > B) < C) =

57) If L_1 and L_2 are two chords on the same circle and S_1 and S_2 are the distance between the chords and the center of the circle respectively If $L_1 < L_2$, Then

S_1 …….. S_2.

A) > B) < C) =

58) In congruent circle the chords which are equal in length are …….. from the center.

A) parallel B) equidistant C) perpendicular D) intersecting

59) The length of the semicircle = ……

A) πr B) $2\pi r$ C) $\frac{1}{2}\pi r$ D) $[\pi r]^2$

60) The measure of the arc which represent the semi circle = ……..°.

A) 90 B) 180 C) 270 D) 360

61) The central angle whose measure 90° subtends an arc of length = …….. of the circumference of the circle.

A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $\frac{1}{4}$ D) $\frac{1}{6}$

62) The central angle whose measure 90° subtends an arc of length = …….. of the circumference of the semicircle.

A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $\frac{1}{4}$ D) $\frac{1}{6}$

63) The central angle whose measure 180° subtends an arc of length = …….. of the circumference of the circle.

A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $\frac{1}{4}$ D) $\frac{1}{6}$

64) The central angle whose measure 60° subtends an arc of length = …….. of the circumference of the circle.

A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $\frac{1}{4}$ D) $\frac{1}{6}$

65) …… angle is the angle whose vertex lies on a circle and its sides contains two chords in the same circle.

A) right B) acute C) central D) inscribed

66) …… angle is the angle whose vertex lies on center of the circle and its sides contains two radius in the same circle.

A) right B) acute C) central D) inscribed

67) For each inscribed angle their ……. central angle.

A) 0 B) 1 C) 2 D) infinite number

68) The measure of inscribed angle = …… of the measure of the central angle subtends by the same arc.

A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $\frac{1}{4}$ D) $\frac{1}{6}$

69) The measure of inscribed angle = …… of the measure of the subtend arc.

A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $\frac{1}{4}$ D) $\frac{1}{6}$

70) The inscribed angle in the semicircle is a/an …… angle.

A) right B) acute C) obtuse D) straight

71) The inscribed angle in the arc which less than semicircle is a/an …… angle.

A) right B) acute C) obtuse D) straight

72) The inscribed angle in the arc which greater than semicircle is a/an …… angle.

A) right B) acute C) obtuse D) straight

73) If two chords intersect at a point inside the circle, Then the measure of the included angle = ……. of sum of the measure of the two opposite arcs.

A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $\frac{1}{4}$ D) $\frac{1}{6}$

74) If two chords intersect at a point outside the circle, Then the measure of the included angle = ……. of the measure of the two major arc subtracted from it the measure of major arc in which both are included by two sides of the angle.

A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $\frac{1}{4}$ D) $\frac{1}{6}$

75) If the measure of the inscribed angle = 45°, Then the measure of the central angle subtends in the same arc = ……..°.

A) 45 B) 90 C) 135 D) 180

76) If the measure of the central angle = 100°, Then measure of the inscribed angle subtends in the same arc = ……..°.

A) 40 B) 50 C) 60 D) 70

77) If the measure of the inscribed angle = 30°, Then the measure of the opposite arc = ……..°.

A) 40 B) 50 C) 60 D) 70

78) The inscribed angle which subtends by a minor arc is a/an …… angle.

A) right B) acute C) obtuse D) reflex

79) The central angle which subtends by a major arc is a/an …… angle.

A) right B) acute C) obtuse D) reflex

80) ABC is an equilateral triangle inscribed in the circle, Then the measure of the arc AB = ……..°

A) 30 B) 60 C) 90 D) 120

81) The two tangent are drawn at the two ends of a diameter in a circle are ……

A) perpendicular B) coincident C) parallel

82) The two tangent are drawn at the two ends of a chord in a circle are ……

A) perpendicular B) coincident C) parallel

83) There are …… common tangent for two touching externally circles.

A) 0 B) 1 C) 2 D) 3

84) There are ..... common tangent for two distant circles.

A) 0 B) 1 C) 2 D) 4

85) There are ..... common tangent for two intersecting circles.

A) 0 B) 1 C) 2 D) 4

86) There are ..... common tangent for two touching internally circles.

A) 0 B) 1 C) 2 D) 3

87) There are ..... common tangent for circles one is inside the other.

A) 0 B) 1 C) 2 D) 4

Question (2) Complete the Following.

1) ..... is the set of points of the plane which are a constant distance from a fixed point in the same plane.

2) ..... is a line segment whose endpoints are the center of the circle and any point in this circle.

3) ..... is a line segment whose endpoints are any two points on the circle.

4) ..... is a line segment whose endpoints are any two points on the circle passing through it's center.

5) Circumference of the circle = ...

6) Area of the circle = ...

7) Diameter is a ..... passing through the center of the circle.

8) The longest chord in the circle is called a .....

9) Any circle have ..... of axis of symmetry.

10) Any half of a circle have ..... of axis of symmetry.

11) The straight line passing through the center of the circle and a midpoint of the chord is …….. to it.

12) The straight line passing through the center of the circle and perpendicular to a chord, Then this line …….. this chord.

13) The straight line which is perpendicular to a chord and bisect it must be passing through ……..

14) The circumference of the circle whose radius length is 12 cm = …….. cm. $\pi = \frac{22}{7}$

15) The circumference of the circle whose radius length is 20 cm = ……. cm. $\pi = \frac{22}{7}$

16) The circumference of the circle whose diameter length is 22 cm = ……cm. $\pi = \frac{22}{7}$

17) The circumference of the circle whose longest chord length is 66 cm

= ……..cm. $\pi = \frac{22}{7}$

18) A chord with length 8 cm is drawn in circle with radius 5 cm, Then it's distance from the center = …….. cm.

19) Any circle have ……. Number of radius, …… number of diameters and …… number of chords.

20) Diameter = …….. × Radius.

21) If two radius of two circles are equal in length, Then the two circles are ……..

22) Any line passing through center of the circle is ……

23) The axis of symmetry of any chord of the circle passing through the center of this circle is also an axis of symmetry for ……..

24) The area of the circle whose its radius is 10 cm = …… cm^2

25) The area of the circle whose its diameter is 10 cm = …… cm^2

26) The area of the circle whose its longest chord is 16 cm = …… cm^2

27) M is a center of the circle and A is a point, If MA > r then the point a is ……. The circle.

28) M is a center of the circle and A is a point, If MA < r then the point a is ……. The circle.

29) M is a center of the circle and A is a point, If MA = r then the point a is ……. The circle.

30) If the point A lies on the circle M whose diameter length is 20 cm, Then

MA = …… cm.

31) A circle M with circumference 21 π cm and the point A lies on its plane, If MA = 5 cm, Then the point A lies ……. circle.

32) If L is a straight line in the same plane with the circle M and AM is the perpendicular distance between L and circle M, If AM > r then L is …… the circle.

33) If L is a straight line in the same plane with the circle M and AM is the perpendicular distance between L and circle M, If AM = r then L is …… the circle.

34) If L is a straight line in the same plane with the circle M and AM is the perpendicular distance between L and circle M, If AM < r then L is …… the circle.

35) The tangent to the circle with diameter 9 cm is at a distance of …….. cm.

36) If the diameter length of the circle is 8 cm and the straight line L is at 8.1 cm, Then L is …… the circle.

37) If the diameter length of the circle is 8 cm and the straight line L is at 5.5 cm, Then L is …… the circle.

38) If the diameter length of the circle is 8 cm and the straight line L is at 8 cm, Then L is …… the circle.

39) The tangent of the circle is ……. To the radius drawn from the point of tangency.

40) The two tangent are drawn from two endpoints of a diameter of a circle are ……

41) If A belongs to the surface of the circle M whose diameter length is 16 cm, Then MA ∈ ……..

42) If A lies outside of the circle M whose diameter length is 7 cm, Then MA ∈ ……..

43) M and N are two circles and their radius lengths are r_1 and r_2, where $r_1 > r_2$

If $MN > r_1 + r_2$, Then the two circles are ……

44) M and N are two circles and their radius lengths are r_1 and r_2, where $r_1 > r_2$

If $MN = r_1 + r_2$, Then the two circles are ……

45) M and N are two circles and their radius lengths are r_1 and r_2, where $r_1 > r_2$

If $MN = r_1 - r_2$, Then the two circles are ……

46) M and N are two circles and their radius lengths are r_1 and r_2, where $r_1 > r_2$

If $r_1 - r_2 < MN < r_1 + r_2$, Then the two circles are ……

47) M and N are two circles and their radius lengths are r_1 and r_2, where $r_1 > r_2$

If $r_1 - r_2 > MN$, Then the two circles are ……

48) M and N are two circles and their radius lengths are r_1 and r_2, where $r_1 > r_2$

If MN = 0, Then the two circles are ……

49) M and N are two circles and their radius lengths are r_1 and r_2, where $r_1 = 10$ cm, $r_2 = 7$ cm and MN = 18 cm, Then the two circles are ……

50) M and N are two circles and their radius lengths are r_1 and r_2, where r_1 = 10 cm, r_2 = 7 cm and MN = 17 cm, Then the two circles are ……

51) M and N are two circles and their radius lengths are r_1 and r_2, where r_1 = 10 cm, r_2 = 7 cm and MN = 5 cm, Then the two circles are ……

52) M and N are two circles and their radius lengths are r_1 and r_2, where r_1 = 10 cm, r_2 = 7 cm and MN = 3 cm, Then the two circles are ……

53) M and N are two circles and their radius lengths are r_1 and r_2, where r_1 = 10 cm, r_2 = 7 cm and MN = 0 cm, Then the two circles are ……

54) M and N are two circles and their radius lengths are r_1 and r_2, where r_1 = 10 cm, r_2 = 7 cm and MN = 2.5 cm, Then the two circles are ……

55) If the surface of the circle M ∩ the surface of the circle N = {A}, Then the two circles are ……

56) If the surface of the circle M ∩ the surface of the circle N = {A , B}, Then the two circles are ……

57) If the surface of the circle M ∩ the surface of the circle N = ϕ, Then the two circles are ……

58) The line of centers of two touching circles passes through the point of tangency is …… to the common tangent.

59) The line of centers of two intersecting circles is …… to the common chord and bisect it.

60) If M and N are two distant circles, Then MN ∈]…… , ……[.

61) If M and N are two intersecting circles, Then MN ∈]…… , ……[.

62) If M and N are concentric circles, Then MN ∈]…… , ……[.

63) The circle is identified if we know …… , ……

64) You can draw …… of circles passing through one point.

65) You can draw …… of circles passing through two points.

66) If AB is a line segment and the required is drawing a circle passing the two points A and B and r > $\frac{1}{2}$AB, Then you can draw …….. circle.

67) If AB is a line segment and the required is drawing a circle passing the two points A and B and r < $\frac{1}{2}$AB, Then you can draw …….. circle.

68) If AB is a line segment and the required is drawing a circle passing the two points A and B and r = $\frac{1}{2}$AB, Then you can draw …….. circle.

69) You can draw …… of circles passing through three collinear points.

70) You can draw …… of circles passing through three non-collinear points.

71) If the circles required to be drawn to pass through one point are congruent, Then all the centers of this circle are …… which are …….. to all this circles.

72) It's impossible to draw a circle passing through ……

73) The circle which passing through 3 vertices of triangle is called …….. of this triangle.

74) The perpendicular bisectors of the sides of a triangle intersect at a point which is …… of the triangle.

75) The position of the center of the circumcircle of the triangle in right angled triangle is ……

76) The position of the center of the circumcircle of the triangle in acute angled triangle is ……

77) The position of the center of the circumcircle of the triangle in obtuse angled triangle is ……

78) You can draw a circle passing through the vertices of ……., ……., ……., …….

79) You can't draw a circle passing through the vertices of ……, ……, ……

80) The center of the circumcircle in the equilateral triangle is

The point of intersection of ……

The point of intersection of ……

The point of intersection of ……

The point of intersection of ……

81) If L_1 and L_2 are two chords on the same circle and S_1 and S_2 are the distance between the chords and the center of the circle respectively If $S_1 > S_2$, Then

L_1 …… L_2.

82) If L_1 and L_2 are two chords on the same circle and S_1 and S_2 are the distance between the chords and the center of the circle respectively If $S_1 = S_2$, Then

L_1 …… L_2.

83) If L_1 and L_2 are two chords on the same circle and S_1 and S_2 are the distance between the chords and the center of the circle respectively If $S_1 < S_2$, Then

L_1 …… L_2.

84) In congruent circle the chords which are equal in length are ……. from the center.

85) In congruent circle the chords which are equidistance are ……. In length.

86) The closer the chord is from center of the circle the ……. Its length.

87) The ……. Angle in a circle is the angle whose vertex is the center of the circle and each side of its sides is a radius of the circle.

88) If AB is a diameter of the circle then the arc AB is called …….

89) The measure of the arc in the circle = measure of ……

90) The length of the arc in the circle is proportional to ……

91) The length of the arc = ——————— × ……

92) In congruent circles if the measure of the arcs are equal, Then the length of them are …….

93) In congruent circles if the measure of the arcs are equal, Then the length of their chords are …….

94) In congruent circles if the length of the arcs are equal, Then the measure of them are …….

95) In congruent circles if the length of the arcs are equal, Then the length of their chords are …….

96) If two parallel chords are drawn in a circle, Then the measure of the two arcs between them are ……..

97) If two parallel chords are drawn in a circle, Then the length of the two arcs between them are ……..

98) If a chord is parallel to a tangent of a circle, Then the measure of the measure of the two arcs between them are …….

99) If a chord is parallel to a tangent of a circle, Then the length of the measure of the two arcs between them are …….

100) The length of the semicircle = ……

101) The measure of the arc which represent the semi circle = ……..°.

102) The central angle whose measure 90° subtends an arc of length = …….. of the circumference of the circle.

103) The central angle whose measure 45° subtends an arc of length = …….. of the circumference of the semicircle.

104) The central angle whose measure 270° subtends an arc of length = …….. of the circumference of the circle.

105) The central angle whose measure 120° subtends an arc of length = ……. of the circumference of the circle.

106) …… angle is the angle whose vertex lies on a circle and its sides contain two chords in the same circle.

107) …… angle is the angle whose vertex lies on center of the circle and its sides contains two radius in the same circle.

108) For each inscribed angle their ……. central angle.

109) The measure of inscribed angle = …… of the measure of the central angle subtends by the same arc.

110) The measure of inscribed angle = …… of the measure of the subtend arc.

111) The inscribed angle in the semicircle is a/an …… angle.

112) The inscribed angle in the arc which less than semicircle is a/an …… angle.

113) The inscribed angle in the arc which greater than semicircle is a/an …… angle.

114) If two chords intersect at a point inside the circle, Then the measure of the included angle = …….. of sum of the measure of the two opposite arcs.

115) If two chords intersect at a point outside the circle, Then the measure of the included angle = ……. of the measure of the two major arc subtracted from it the measure of major arc in which both are included by two sides of the angle.

116) If the measure of the inscribed angle = 55°, Then the measure of the central angle subtends in the same arc = …….°.

117) If the measure of the central angle = 120°, Then measure of the inscribed angle subtends in the same arc = …….°.

118) If the measure of the inscribed angle = 80°, Then the measure of the opposite arc = ……°.

119) The inscribed angle which subtends by a minor arc is a/an …… angle.

120) The central angle which subtends by a major arc is a/an …… angle.

121) ABC is an equilateral triangle inscribed in the circle, Then the measure of the arc AB = ……..°

122) The measure of all inscribed angles subtends by the same arc are …….

123) The measure of all inscribed angles subtends by arcs equal in length are …….

124) The inscribed angles equal in measure subtends arcs …….. in length and measure.

125) ……. quadrilateral is the quadrilateral whose four vertices belong to one circle.

126) ……. quadrilateral is the quadrilateral whose each two angles are drawn in a side of its sides as a base are equal in measure.

127) ……. quadrilateral is the quadrilateral whose each two opposite angles are supplementary.

128) ……. quadrilateral is the quadrilateral whose the measure of the exterior angle at any vertex equal the measure of the interior angle opposite to its adjacent.

129) …… , ……. and …… are cyclic quadrilateral.

130) ……. and …….. aren't cyclic quadrilateral.

131) The diagonal which is opposite to the right angle of the cyclic quadrilateral are …… And its midpoint is ……..

132) The two tangent are drawn at the two ends of a diameter in a circle are …….

133) The two tangent are drawn at the two ends of a chord in a circle are …….

134) The two tangent draw to a circle from a point outside it are ……

135) The straight line passing through the center of the circle and the intersection point of the two tangent is an …….. to the chord of tangency.

136) ……. Circle is the circle which touches all of its sides internally.

137) The center of inscribed circle is the point of intersection of the bisectors of its ……

138) There are …… common tangent for two touching externally circles.

139) There are …… common tangent for two distant circles.

140) There are …… common tangent for two intersecting circles.

141) There are …… common tangent for two touching internally circles.

142) There are …… common tangent for circles one is inside the other.

143) …… angle is the angle which is composed of two rays one of them is a tangent and the other is a chord passing through a point of tangency.

144) The measure of angle of tangency = $\frac{1}{2}$ of

or = $\frac{1}{2}$

or =

145) The tangency angle is …….. to the drawn inscribed angle on the chord of the tangency and in one side of it.

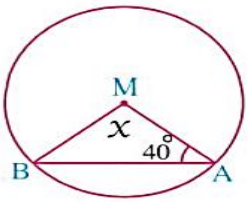
146) The ray is drawn from one end of a chord of a circle and the angle between this ray and the chord is equal to the inscribed angle subtends by the chord, Then this ray is a ……

147) The angle of tangency is included between …… and ……

Question (3) Essay problems.

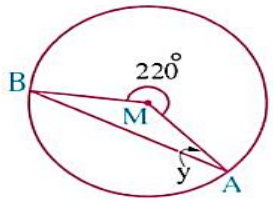
1) Find the value of X and Y in each of the following.

1



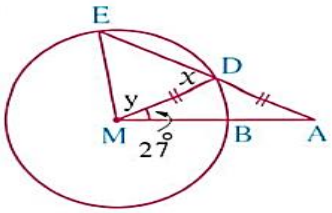
$x = \ldots\ldots^\circ$

2



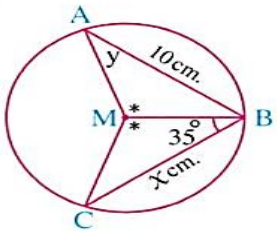
$y = \ldots\ldots^\circ$

3



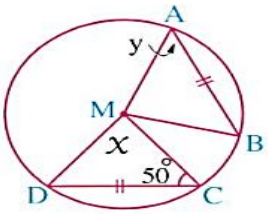
$x = \ldots\ldots^\circ$
$y = \ldots\ldots^\circ$

4



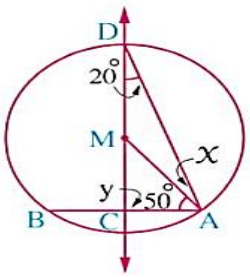
$x = \ldots\ldots$ cm.
$y = \ldots\ldots^\circ$

5



$x = \ldots\ldots^\circ$
$y = \ldots\ldots^\circ$

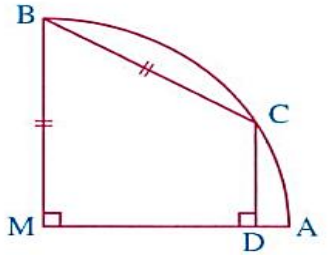
6



$x = \ldots\ldots^\circ$
$y = \ldots\ldots^\circ$

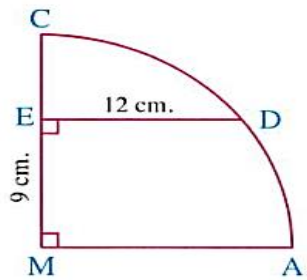
2) Find the ordered in each of the following.

1



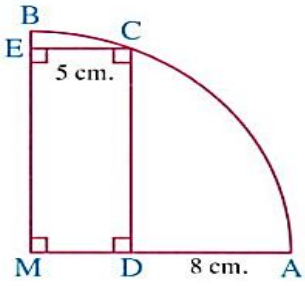
m (∠ BCD) = $\ldots\ldots^\circ$

2



The length of $\overline{EC}$ = …… cm.

3



The area of the rectangle = …… cm^2

3)

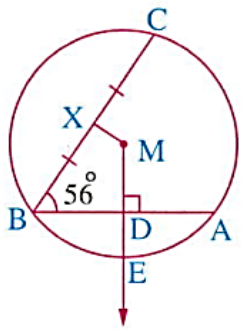
In the opposite figure :

$\overline{AB}$ and $\overline{BC}$ are two chords in circle M ,

which has radius length of 5 cm. ,

$\overrightarrow{MD} \perp \overline{AB}$ intersects $\overline{AB}$ at D and intersects the circle M at E ,

X is the midpoint of $\overline{BC}$, AB = 8 cm. , m (∠ ABC) = 56°



Find : [1] m (∠ DMX) [2] The length of $\overline{DE}$

(El-Menia 19 , El-Gharbia 17 , Souhag 15) « 124° , 2 cm. »

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4)

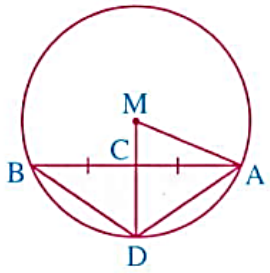
In the opposite figure :

M is a circle of radius length 13 cm. ,

$\overline{AB}$ is a chord of length 24 cm. ,

C is the midpoint of $\overline{AB}$

and $\overrightarrow{MC} \cap$ circle M = {D}



Find : The area of the triangle ADB

(El-Dakahlia 13) « 96 cm^2 »

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5)

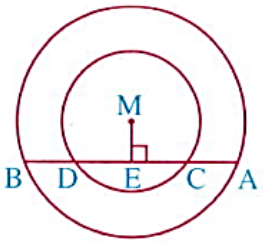
In the opposite figure :

Two concentric circles with centre M ,

$\overline{AB}$ is a chord of the greater circle

and intersects the smaller circle at C , D

and $\overline{ME} \perp \overline{AB}$



Prove that : AC = BD *(Giza 23 , El-Kalyoubia 22 , El-Gharbia 18 , Souhag 18 , Qena 17)*

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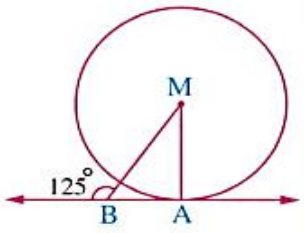
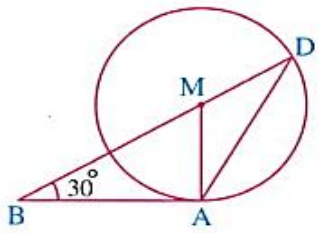
6) AB is a tangent, Then complete each of the following.

1



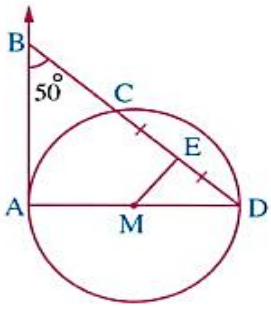
m (∠ AMB) = ...°

2



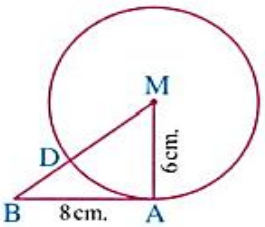
m (∠ ADB) = ...°

3



m (∠ AME) = ...°

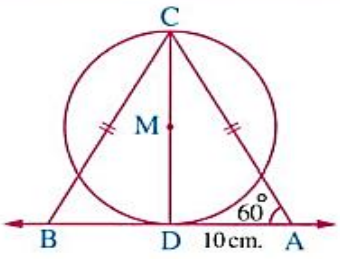
4



DB = ... cm.

(El-Gharbia 12)

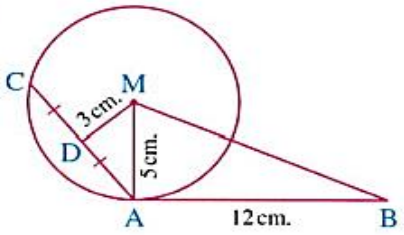
5



The perimeter of
Δ ABC = ... cm.

(Alexandria 11)

6



The perimeter of the
figure ABMD = ... cm.

7)

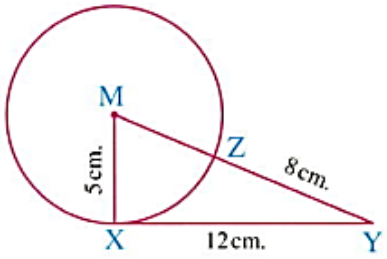
In the opposite figure :

M is a circle with radius length 5 cm. ,

XY = 12 cm. , $\overline{MY} \cap$ circle M = $\{Z\}$

and ZY = 8 cm.

Prove that : $\overleftrightarrow{XY}$ is a tangent to the circle M at X



(Matrouh 17 , South Sinai 16 , Qena 15 , El-Beheira 14)

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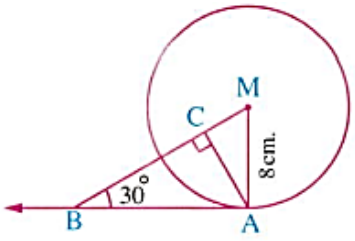
8)

In the opposite figure :

$\overrightarrow{AB}$ is a tangent to the circle M at A ,

MA = 8 cm. , m (∠ ABM) = 30° and $\overline{AC} \perp \overline{MB}$

Find : The length of each of $\overline{AB}$ and $\overline{AC}$



(Giza 19 , Matrouh 18 , New Valley 18 , El-Monofia 14) « $8\sqrt{3}$ cm. , $4\sqrt{3}$ cm. »

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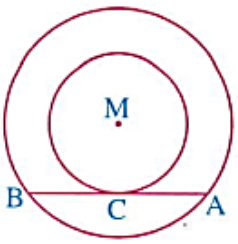
9)

In the opposite figure :



Two circles are concentric at M , $\overline{AB}$ is a chord in the greater circle and touches the smaller circle at C , if AB = 14 cm.

Find : The area of the part included between the two circles. *(El-Dakahlia 19)* « 49 π cm² »

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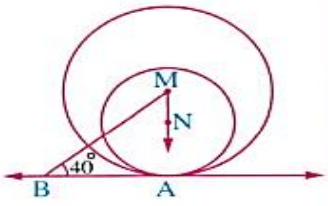
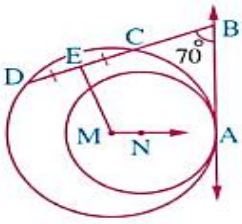
10) Find each of the following.

1



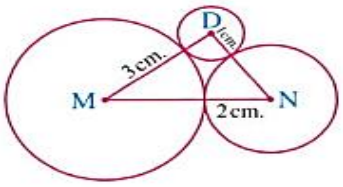
m (∠ BMN) = ...°

2



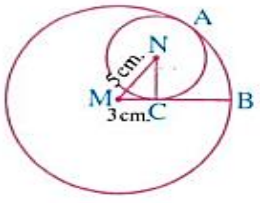
m (∠ EMN) = ...°

3



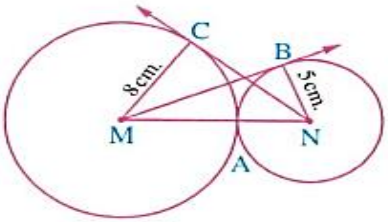
m (∠ MDN) = ...°

4



BC = ... cm.

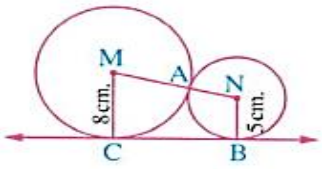
5



MB = ... cm.

NC = ... cm.

6



BC = ... cm.

11)

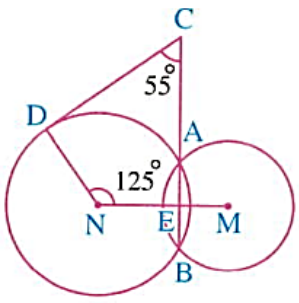
In the opposite figure :

M and N are two intersecting circles at A and B ,

$C \in \overrightarrow{BA}$, D ∈ the circle N ,

m (∠ MND) = 125° and m (∠ BCD) = 55°

Prove that : $\overleftrightarrow{CD}$ is a tangent to the circle N at D



(El-Beheira 23 , Red Sea 19 , Kafr El-Sheikh 17 , Souhag 15)

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12)

In the opposite figure :

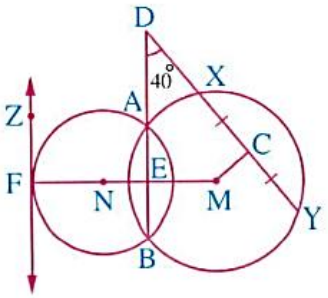
M and N are two intersecting circles at A and B ,

C is the midpoint of $\overline{XY}$, m (∠ D) = 40° ,

$\overleftrightarrow{FZ}$ is a tangent to the circle N at F where $\overleftrightarrow{MN} \cap \overleftrightarrow{FZ} = \{F\}$

1 **Find :** m (∠ CME) « 140° »

2 **Prove that :** $\overleftrightarrow{FZ} \parallel \overline{AB}$



(El-Fayoum 11)

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13) Draw a right angled triangle at B where AB = 4 cm and BC = 3 cm then draw the circumcircle of this triangle, and find where does the center of this circle lie.

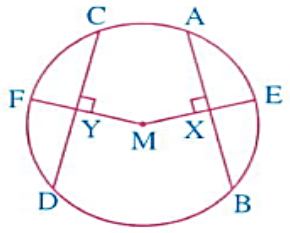
14)

Using your geometric tools , draw $\overline{AB}$ of length 4 cm. , then draw on one figure :

1. A circle passing through the two points A and B and its diameter length is 5 cm.
   What are the possible solutions ?
2. A circle passing through the two points A and B and its radius length is 2 cm.
   What are the possible solutions ?
3. A circle passing through the two points A and B and its diameter length is 3 cm.
   What are the possible solutions ?

15)

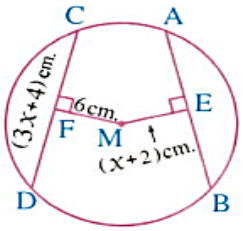
1



If AB = CD , then MX = ...

∵ ME = ... ∴ EX = ...

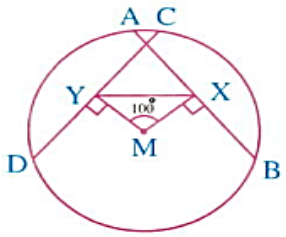
2



If AB = CD , then ME = ...

∴ X = ... cm. ∴ CD = ... cm.

3



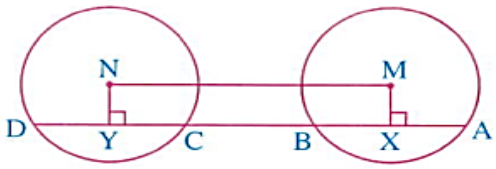
If AB = CD , then MX = ...

In Δ MXY

∵ m (∠ XMY) = 100°

∴ m (∠ MXY) = ...°

4



If M and N are two congruent circles ,

AB = CD , then MX = ...

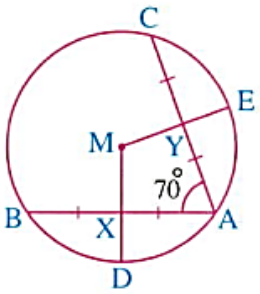
and the figure MXYN is .....

16)

📖 **In the opposite figure :**

$\overline{AB}$ and $\overline{AC}$ are two chords equal in length in the circle M , X is the midpoint of $\overline{AB}$,

Y is the midpoint of $\overline{AC}$ and m (∠ CAB) = 70°



1 **Calculate :** m (∠ DME) « 110° »

2 **Prove that :** XD = YE *(El-Monofia 23 , New Valley 19 , Port Said 18 , Matrouh 18 , Cairo 17)*

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17)

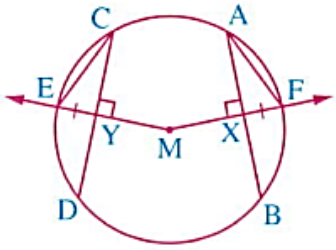
In the opposite figure :

$\overline{AB}$ and $\overline{CD}$ are two chords of the circle M ,

$\overrightarrow{MX} \perp \overline{AB}$ and intersects the circle at F ,

$\overrightarrow{MY} \perp \overline{CD}$ and intersects the circle at E ,

FX = EY



Prove that :

1 AB = CD 2 AF = CE *(Luxor 23 , El-Gharbia 16 , Kafr El-Sheikh 11)*

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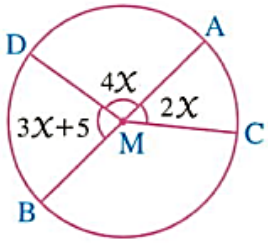
18)

In the opposite figure :

$\overline{AB}$ is a diameter of the circle M

Study the figure , then complete :



1 X = ...°

2 m $(\overset{\frown}{AC})$ = ...°

3 m $(\overset{\frown}{AD})$ = ...°

4 m $(\overset{\frown}{BC})$ = ...°

5 m $(\overset{\frown}{CAD})$ = ...°

6 m $(\overset{\frown}{CBD})$ = ...°

7 m $(\overset{\frown}{ACD})$ = ...°

8 m $(\overset{\frown}{ADC})$ = ...°

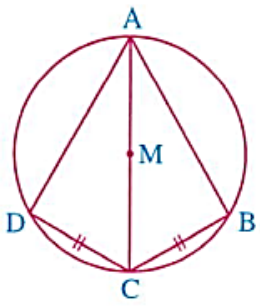
19)

In the opposite figure :

ABCD is a quadrilateral inscribed in a circle M

, $\overline{AC}$ is a diameter in the circle , CB = CD

Prove that : m $(\overset{\frown}{AB})$ = m $(\overset{\frown}{AD})$



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20)

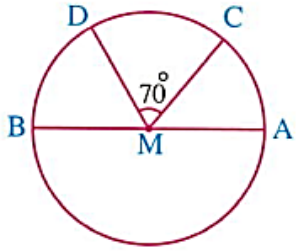
In the opposite figure :

$\overline{AB}$ is a diameter of the circle M

, m $(\angle CMD) = 70°$

, m $(\overset{\frown}{AC})$: m $(\overset{\frown}{DB}) = 5 : 6$

Find : m $(\overset{\frown}{ACD})$



(El-Gharbia 23 , Assiut 12) « 120° »

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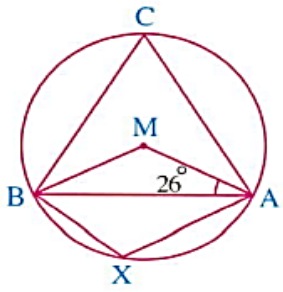
21)

In the opposite figure :

Δ ABC is inscribed in the circle M , $\overline{MA}$ and $\overline{MB}$ are two radii in it , m ($\angle$ MAB) = 26° , X $\in \overset{\frown}{AB}$



Find by proof :

1 m ($\angle$ AMB)

2 m ($\angle$ ACB)

3 m ($\angle$ AXB)

4 m ($\overset{\frown}{AXB}$)

« 128° , 64° , 116° , 128° »

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22)

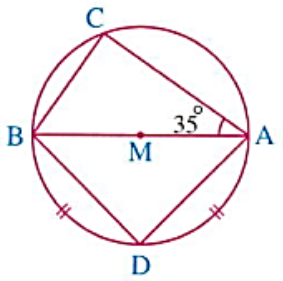
In the opposite figure :

$\overline{AB}$ is a diameter in the circle M ,

the length of $\overset{\frown}{AD}$ = the length of $\overset{\frown}{BD}$,

m ($\angle$ CAB) = 35°

Find by proof : m ($\angle$ CBD)



(El-Menia 11) « 100° »

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23)

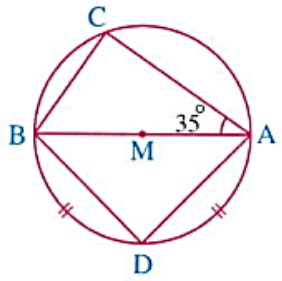
In the opposite figure :

$\overline{AB}$ is a diameter in the circle M ,

the length of $\overset{\frown}{AD}$ = the length of $\overset{\frown}{BD}$,

m (∠ CAB) = 35°

Find by proof : m (∠ CBD)



(El-Menia 11) « 100° »

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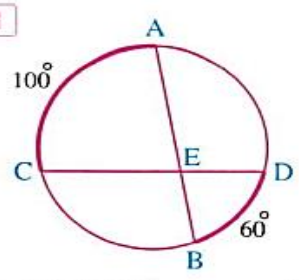
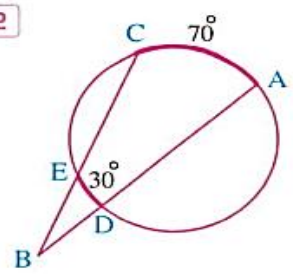
24) Find.

1



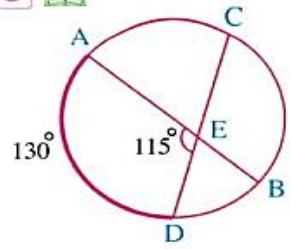
m (∠ AEC) = ...°

2



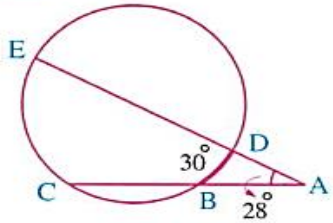
m (∠ B) = ...°

3



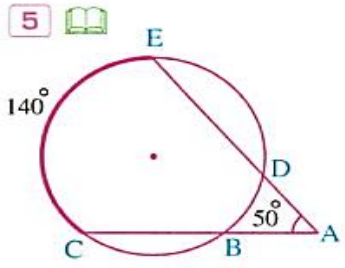
m $(\overset{\frown}{BC})$ = ...°

4



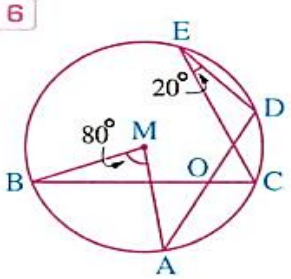
m $(\overset{\frown}{EC})$ = ...°

5



m $(\overset{\frown}{DB})$ = ...°

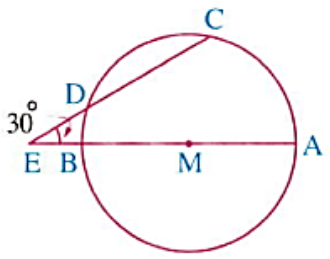
6



m (∠ AOB) = ...°

25)

In the opposite figure :



$\overline{AB}$ is a diameter in the circle M

, $\overrightarrow{AB} \cap \overrightarrow{CD} = \{E\}$

, $m(\angle AEC) = 30°$, $m(\overset{\frown}{AC}) = 80°$

Find : $m(\overset{\frown}{CD})$ *(Aswan 23 , Alex. 18 , El-Sharkia 17 , Aswan 17)* « 80° »

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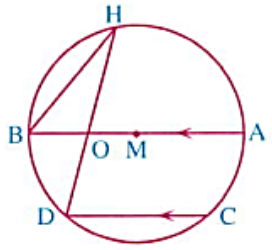
26)

In the opposite figure :



$\overline{AB}$ is a diameter in the circle M ,

$\overline{AB} // \overline{DC}$, $m(\overset{\frown}{DC}) = 80°$,

$m(\overset{\frown}{AH}) = 100°$

Find by proof : $m(\angle DHB)$, $m(\angle AOH)$ *(El-Menia 17)* « 25° , 75° »

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27) Find the value of each variable in each of the following.

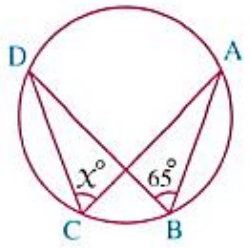

Fig. (1)

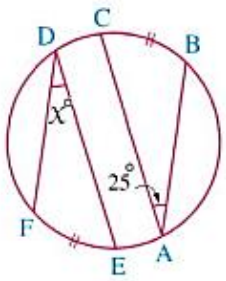

Fig. (2)

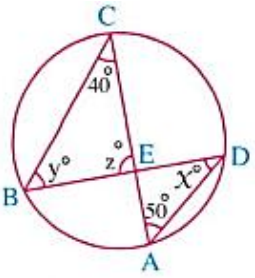

Fig. (3)

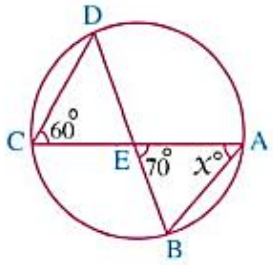

Fig. (4)

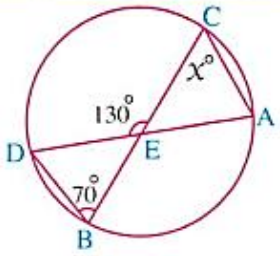

Fig. (5)

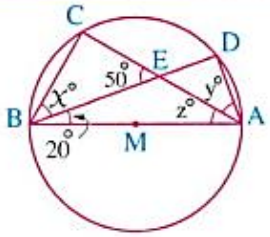

Fig. (6)

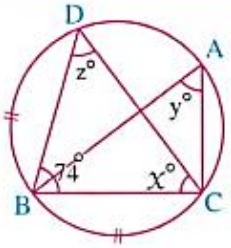

Fig. (7)

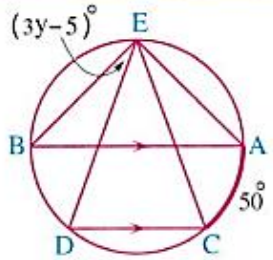

Fig. (8)
(El-Kalyoubia 19)

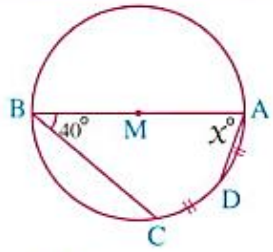

Fig. (9)
(Giza 23)

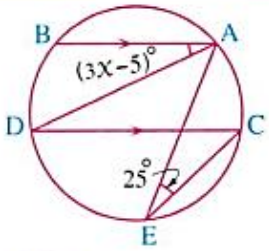

Fig. (10)
(El-Gharbia 23)

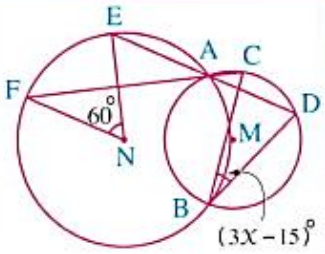

Fig. (11)

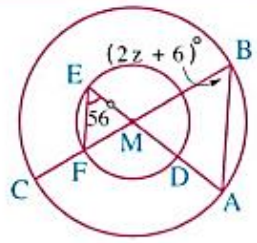

Fig. (12)

28) Mention 3 cases the quadrilateral will be cyclic quadrilateral.

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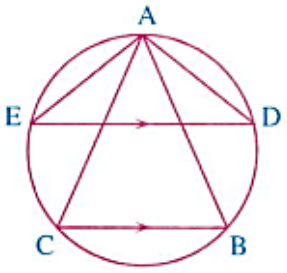
29)

In the opposite figure :

ABC is a triangle inscribed in a circle ,

$\overline{DE} \parallel \overline{BC}$

Prove that : m (∠ DAC) = m (∠ BAE)



(El-Monofia 23 , Matrouh 19 , Ismailia 18 , El-Fayoum 17 , El-Gharbia 16)

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30) If ABCD is a cyclic quadrilateral, find each variable.

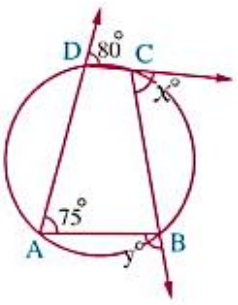


Fig. (1)

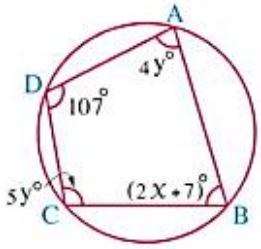


Fig. (2)

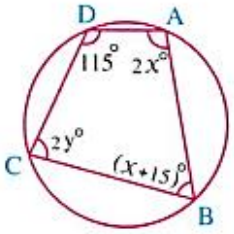


Fig. (3)

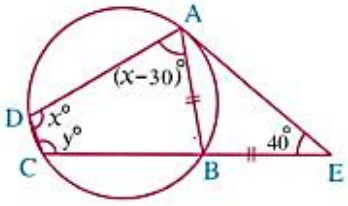


Fig. (4)

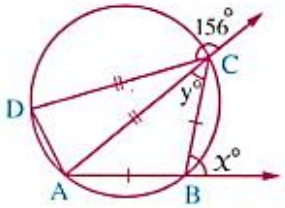


Fig. (5)

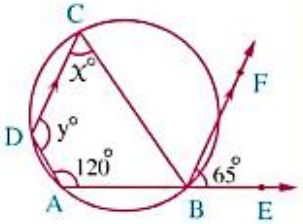


Fig. (6)

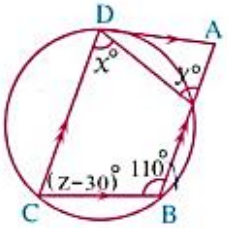


Fig. (7)

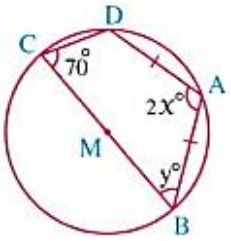


Fig. (8)

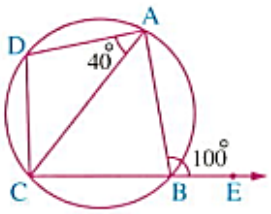
31)

In the opposite figure :

m (∠ ABE) = 100°

and m (∠ CAD) = 40°

Prove that : m $(\overset{\frown}{CD})$ = m $(\overset{\frown}{AD})$



(El-Monofia 23 , Giza 19 , Red Sea 18 , El-Gharbia 17 , Souhag 15)

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32) Which of the following figures are cyclic quadrilateral.

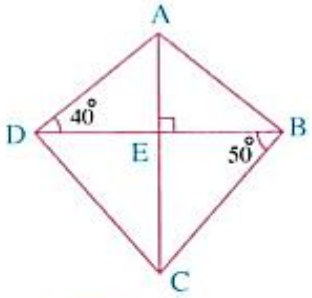


Fig. (1)

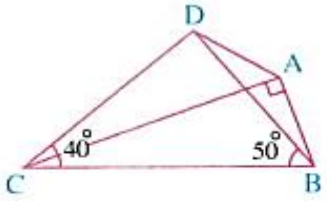


Fig. (2)

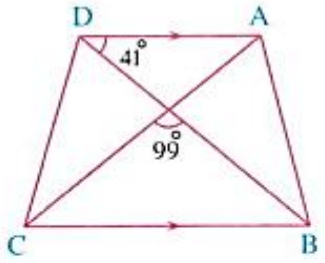


Fig. (3)

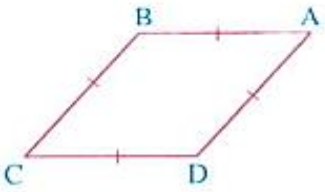


Fig. (4)

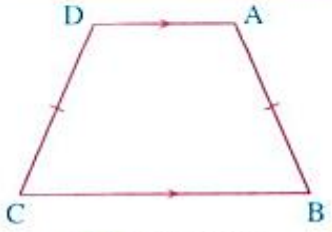


Fig. (5)

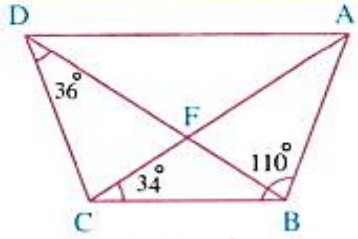
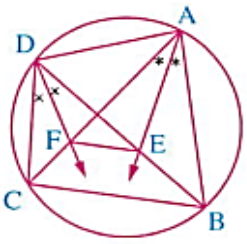


Fig. (6)

33)

In the opposite figure :



ABCD is a cyclic quadrilateral which has $\overrightarrow{AE}$ bisects ∠ BAC and $\overrightarrow{DF}$ bisects ∠ BDC

Prove that :

1 AEFD is a cyclic quadrilateral.

2 $\overline{EF}$ // $\overline{BC}$

(El-Gharbia 18 , Luxor 16 , El-Dakahlia 13)

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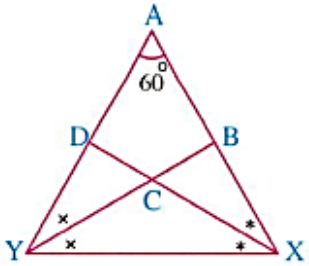
34)

In the opposite figure :



AXY is a triangle in which m (∠ A) = 60°

, $\overrightarrow{XD}$ bisects ∠ AXY , $\overrightarrow{YB}$ bisects ∠ AYX

Prove that :

ABCD is a cyclic quadrilateral.

(El-Beheira 16)

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35) Find the value of each variable in each of the following.

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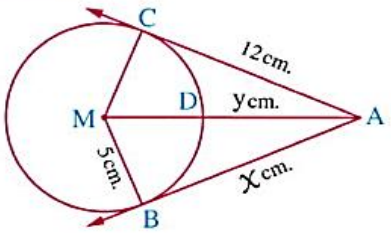
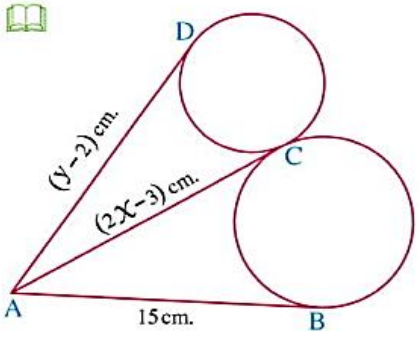


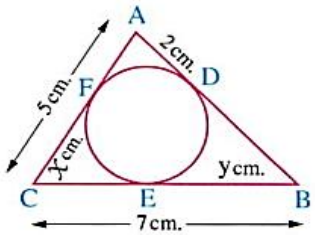
(New Valley 12)

2

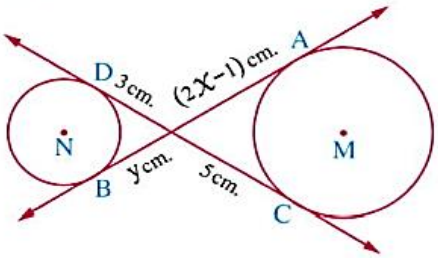


(North Sinai 23 , Ismailia 19)

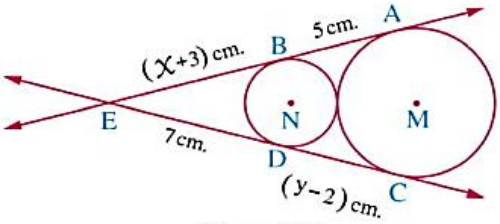
3



4

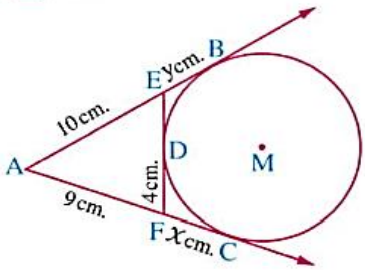


5



(Qena 23)

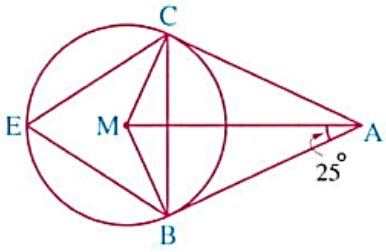
6



36)

In the opposite figure :

$\overline{AB}$ and $\overline{AC}$ are two tangent-segments to the circle M , m (∠ BAM) = 25° and E ∈ $\overset{\frown}{BC}$ the major



Find :

1 m (∠ ACB)

2 m (∠ BEC)

(El-Kalyoubia 18 , New Valley 18) « 65° , 65° »

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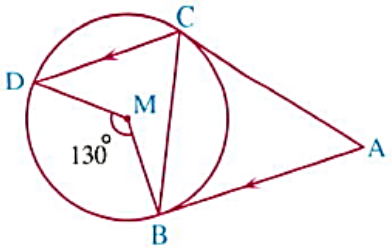
37)

In the opposite figure :

$\overline{AB}$ and $\overline{AC}$ are two tangent-segments to the circle M

, $\overline{AB} \parallel \overline{CD}$ and m (∠ BMD) = 130°

1 **Prove that :** $\overrightarrow{CB}$ bisects ∠ ACD 2 **Find :** m (∠ A)



(Luxor 23 , New Valley 19 , Matrouh 18 , El-Fayoum 17 , El-Gharbia 16) « 50° »

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38)

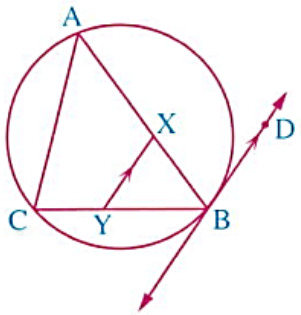
In the opposite figure :

ABC is a triangle inscribed in a circle

, $\overrightarrow{BD}$ is a tangent to the circle at B

, $X \in \overline{AB}$ and $Y \in \overline{BC}$, where $\overline{XY} \parallel \overrightarrow{BD}$

Prove that : AXYC is a cyclic quadrilateral.



(El-Gharbia 23 , Assiut 19 , Kafr El-Sheikh 18 , Cairo 17 , El-Kalyoubia 14)

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39) Find the missing angles.

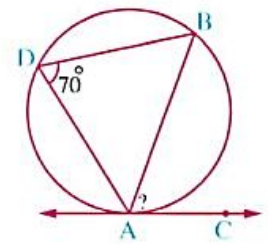

Fig. (1)

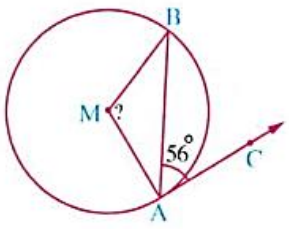

Fig. (2)

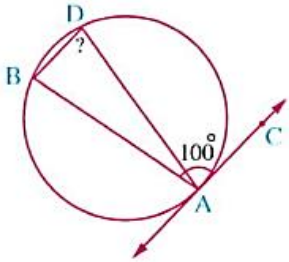

Fig. (3)

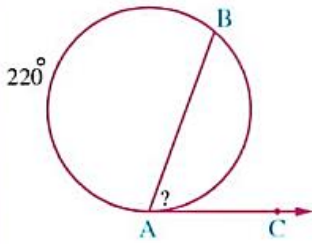

Fig. (4)

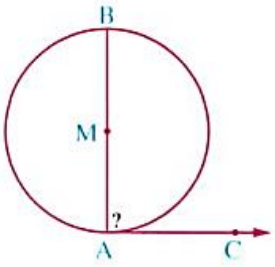

Fig. (5)

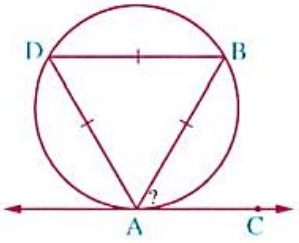

Fig. (6)

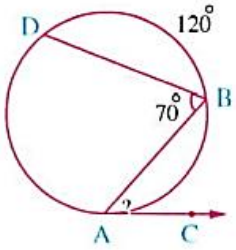

Fig. (7)

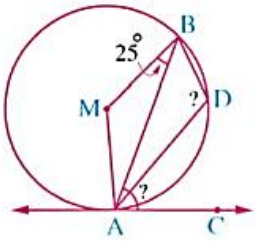

Fig. (8)

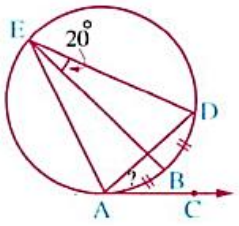

Fig. (9)

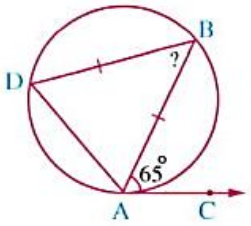

Fig. (10)

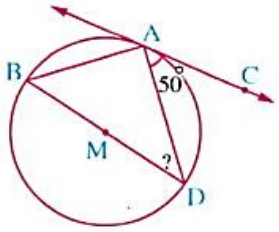

Fig. (11)

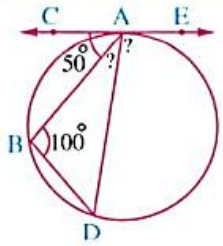

Fig. (12)

40) Prove that AC is a tangent.

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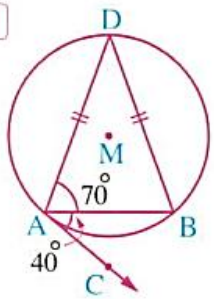

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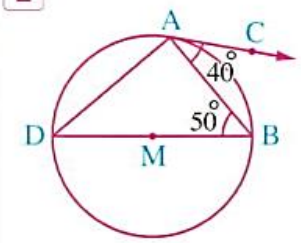

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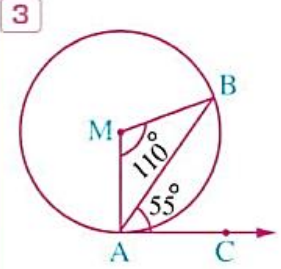

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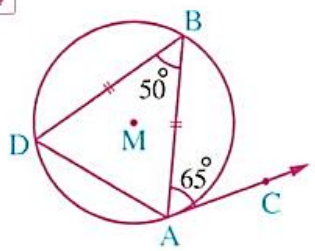

المراجعة رقم (4)

الترم الثانى

1) Choose the correct answer

1) If M circle with radius length = 4 cm and A is a point in its plane, MA = 3 cm, then A is ..... circle M.

(inside – on – outside)

2) If M circle with radius length = 4 cm and A is a point in its plane, MA = 4 cm, then A is ..... circle M.

(inside – on – outside)

3) If M circle with radius length = 4 cm and A is a point in its plane, MA = 5 cm, then A is ..... circle M.

(inside – on – outside)

4) A tangent to a circle is .....the radius at its point of tangency.

(perpendicular to – parallel to – bisects)

5) If a straight line is perpendicular to a diameter of a circle at one of its endpoints, then it is a ..... to the circle.

(axis of symmetry – tangent – chord)

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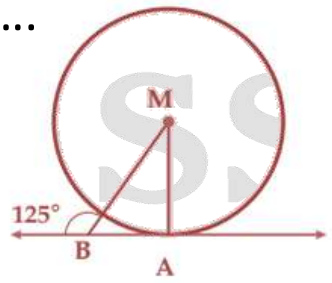
6) In the opposite figure: $m(\angle AMB)$ = ...

(25° – 35° – 45°)



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7) If the surface of the circle M ∩ If the surface of the circle N = ∅ , then the two circles are .....

(Distant - touching externally - intersecting)

8) If M and N are two centers of two circles with radii r_1 , r_2 , where MN > $r_1 + r_2$, then the two circles are .....

(Distant - touching externally - intersecting)

9) If the surface of the circle M ∩ If the surface of the circle N = $\{A\}$, then the two circles are ……

(touching externally - touching internally - intersecting)

10) If the surface of the circle M ∩ If the surface of the circle N = the surface of the circle N , then the two circles are ……

(Distant - touching externally - one inside the other)

11) M and N are two circles touching externally , their radii 9cm , 4cm , then MN = ……..cm (5cm - 7 cm - 13 cm)

12) M and N are two circles touching internally , their radii 9cm , 4cm , then MN = ……..cm (5cm - 7 cm - 12 cm)

13) M and N are two circles, their radii 7cm , 5cm , then MN = 12cm , then the two circles are ……

(Distant - touching externally - touching internally)

14) M and N are two circles, their radii 7cm , 5cm , then MN = 2cm , then the two circles are ……

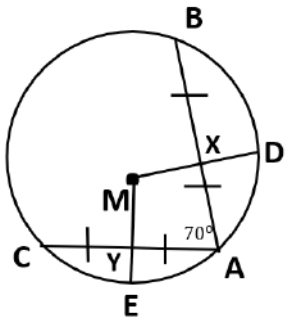
(Distant - touching externally - touching internally)

15) M and N are two circles, their radii 7cm , 5cm , then MN = 15cm , then the two circles are ……

(Distant - touching externally - touching internally)

16) M and N are two intersecting circles their radii 4cm and 6cm then MN ∈ …… **( ]2, 5[,]2, 10[,]4, 9[**

2) In the opposite figure:



AB and AC are two equal chords in circle M , X and Y are the midpoint of AB and AC m(∠A) = 70°

a) Find m(∠DME)

b) Prove that XD = YE

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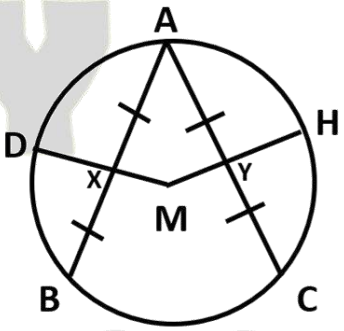
3) In the opposite figure:



AB = AC , X is the mid-point of $\overline{AB}$, Y is the mid-point of $\overline{AC}$ **prove that: DX = HY**

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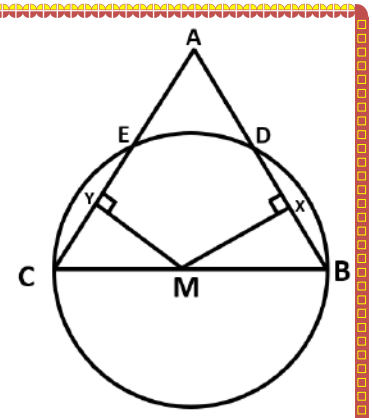
4) In the opposite figure:

ABC is a triangle in which AB = AC. circle M was drawn with diameter $\overline{BC}$ intersecting $\overline{AB}$ at D and $\overline{AC}$ at E , $\overline{MX} \perp \overline{BD}$, $\overline{MY} \perp \overline{CE}$ **prove that : BD = CE**



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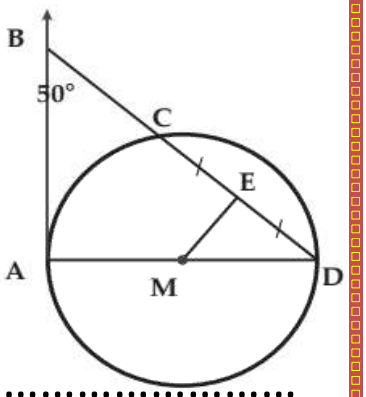
5) In the opposite figure:

AB is a tangent to the circle M, E is the midpoint of the chord CD , m ($\angle$ ABC) = 50°

Find : $m(\angle AME)$



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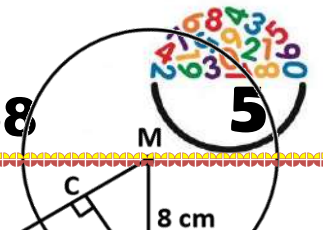

6) In the opposite figure:

AB is a tangent to the circle M at A and
AM = 8 cm , m (∠ ABM) = 30°

Find **the length of each : $\overline{AB}$ and $\overline{AC}$**

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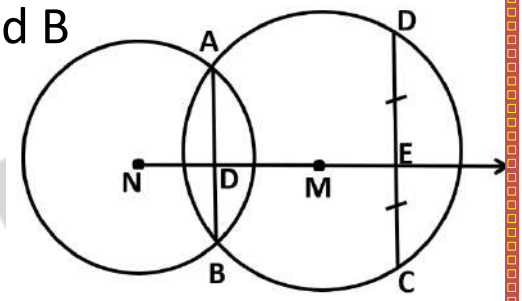
7) In the opposite figure:

The two circles M and N intersects at A and B

CD is a chord in the circle M cuts MN at E

, If E is the midpoint of CD



Prove that $\overline{AB}$ // $\overline{CD}$

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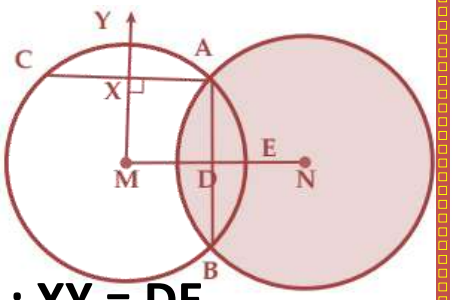
8) In the opposite figure:



The two circles M and N intersect at A and B.

is drawn MX ⊥ AC MN is drawn , AC = AB

1) **Prove that : MD = MX** *2)* **Prove that : XY = DE**

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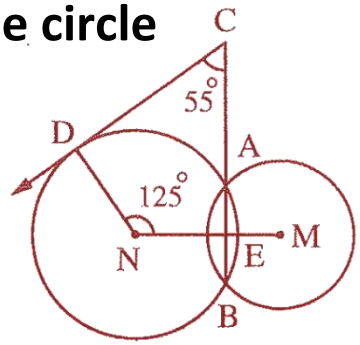
9) In the opposite figure:

M and N are two intersecting circles At A and B , m(∠C)=55° ,

m(∠N)=125° **Prove that :** $\overrightarrow{CD}$ **is a tangent to the circle**



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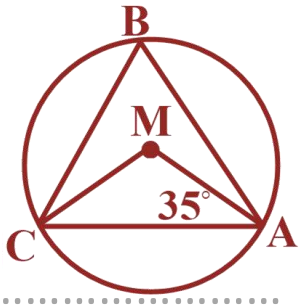
10) In the opposite figure:

M is a circle , m (∠ MAC) = 35°

Find m (∠ ABC)



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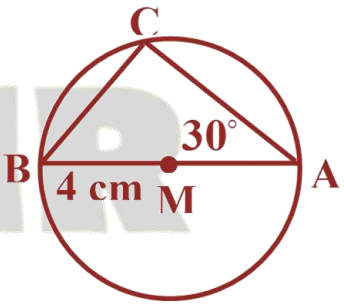
11) In the opposite figure:

$\overline{AB}$ is a diameter in the circle M with radius length 4 cm , m (∠ A) = 30°

1) **Find m (∠ ABC)**

2) **Find the length of BC**



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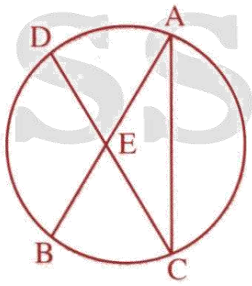
12) In the opposite figure:

AB and CD are two equal chords

Prove that Δ AEC is isosceles



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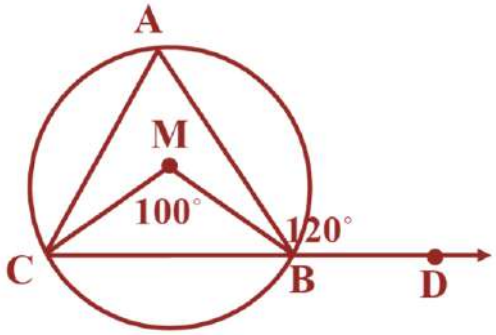
13) In the opposite figure:

Δ ABC drawn in the circle M

D ∈ $\overrightarrow{CB}$ such that m (∠ ABD)=120°

if m (∠ BMC)=100°

Find with proof m (∠ ACB)



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14) In the opposite figure:

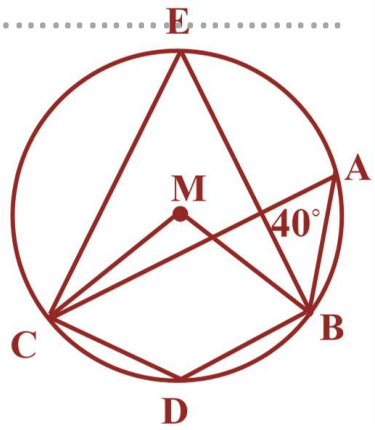
The chords $\overline{AC}$ and $\overline{BE}$ intersects

At X , M is the centre of the circle,

if m(∠BAC)=40°

Find:

1) **m(∠BEC)** *2)* **m(∠BMC)**



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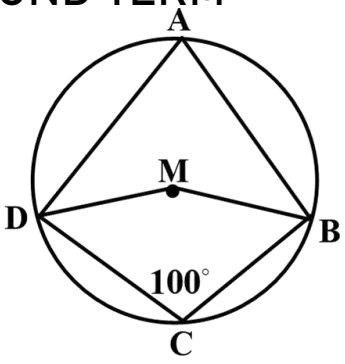
15) In the opposite figure:

M is a circle ABCD is a cyclic quadrilateral ,

$m(\angle C) = 100^\circ$

Find : 1) $m(\angle A)$ 2) $m(\overset{\frown}{BCD})$



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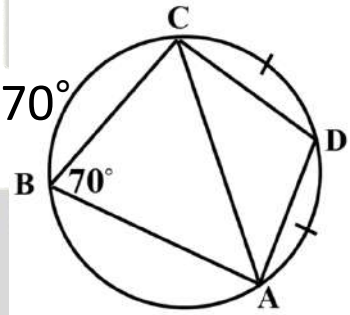
16) In the opposite figure:

ABCD is a cyclic quadrilateral in which $m(\angle ABC)=70^\circ$

The length of $\overset{\frown}{AD}$ = The length of $\overset{\frown}{DC}$

Find : $m(\angle ACD)$



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17) Mention conditions of cyclic quadrilateral

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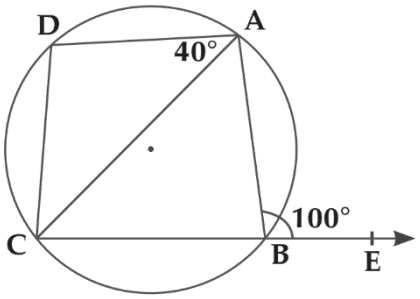
18) In the opposite figure:



m (∠ ABE) = 100° , m (∠CAD) = 40°

Prove that : m ($\widehat{CD}$) = m ($\widehat{AD}$) .

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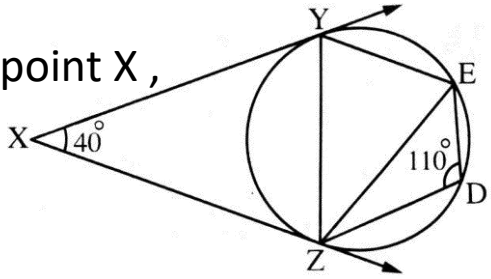
19) In the opposite figure:

XY and XZ are two tangents to the circle from point X ,



M(∠D) = 110° , M(∠X) = 40°

Prove that : m ($\widehat{ZE}$) = m ($\widehat{ZY}$) .

Best Wishes

MR.AMR ALFEKY
Qowesna, Monofia

المراجعة رقم (5)

الترم الثانى

Geometry for prep (3)

(1) Prove that
$\cos 60 = \cos^2 30 - \sin^2 30$

sol

L.H.S $= \cos 60 = \frac{1}{2}$

R.H.S $= \cos^2 30 - \sin^2 30$

$= (\frac{\sqrt{3}}{2})^2 - (\frac{1}{2})^2 = \frac{1}{2}$

L.H.S = R.H.S

(2) Prove that
$\tan 60 = 2\tan 30 \div (1 - \tan^2 30)$

L.H.S $= \tan 60 = \sqrt{3}$

R.H.S $=$
$2\tan 30 \div (1 - \tan^2 30)$

$= 2 \times \frac{1}{\sqrt{3}} \div (1 - (\frac{1}{\sqrt{3}})^2)$

$= \sqrt{3}$

L.H.S = R.H.S

(3) prove that
$\sin^3 30 = 9\cos^3 60 - \tan^2 45$

sol

L.H.S $= \sin^3 30 = (\frac{1}{2})^3$

$= \frac{1}{8}$

R.H.S $= 9\cos^3 60 - \tan^2 45$

$= 9 \times (\frac{1}{2})^3 - (1)^2$

$= \frac{1}{8}$

L.H.S = R.H.S

(4) Prove that
$\sin 60 = 2\sin 30 \cos 30$

L.H.S $= \sin 60 = \frac{\sqrt{3}}{2}$

R.H.S $= 2\sin 30 \cos 30$

$= 2 \times \frac{1}{2} \times \frac{\sqrt{3}}{2}$

$= \frac{\sqrt{3}}{2}$

∴ L.H.S = R.H.S

(5) Find the value of
$\cos 60 * \sin 30 - \sin 60 \cos 30$

$= \frac{1}{2} * \frac{1}{2} - \frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2}$

$= \frac{1}{4} - \frac{3}{4} = \frac{-1}{2}$

Mr. HASSAN SALAMA 01141060113 / 01283914718

(6) Find the value of

$$\frac{\cos^2 60 + \cos^2 30 + \tan^2 45}{\sin 60 \tan 60 - \sin 30}$$

$$= \frac{(\frac{1}{2})^2 + (\frac{\sqrt{3}}{2})^2 + (1)^2}{\frac{\sqrt{3}}{2} \times \sqrt{3} - \frac{1}{2}}$$

$$= 2$$

(7) Find the value of x if $0 < x < 90$

$$\sin x \sin 45 \cos 45 \tan 60 = \tan^2 45 - \cos^2 60$$

Sol

$$\sin x \cdot \frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}} \times \sqrt{3} = (1)^2 - (\frac{1}{2})^2$$

$$\frac{\sqrt{3}}{2} \sin x = \frac{3}{4} \quad (\div \frac{\sqrt{3}}{2})$$

$$\sin x = \frac{\sqrt{3}}{2}$$

$$\therefore x = 60$$

(8) $\sin 2x = \sin 60 \cos 30 - \cos 60 \sin 30$

Sol

$$\sin 2x = \frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2} - \frac{1}{2} \times \frac{1}{2}$$

$$\sin 2x = \frac{1}{2}$$

$$\therefore 2x = 30 \quad (\div 2)$$

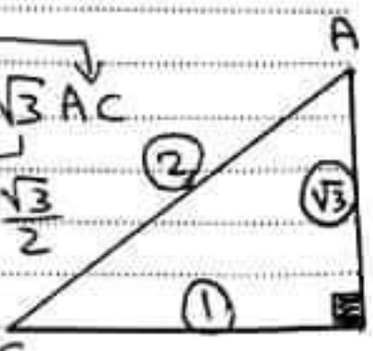
$$x = 15$$

(9) ABC is a right angled triangle at B $2AB = \sqrt{3}\,AC$ find the trigonometrical ratios for angle C

Sol

$\therefore 2AB = \sqrt{3}\,AC$

$$\therefore \frac{AB}{AC} = \frac{\sqrt{3}}{2}$$



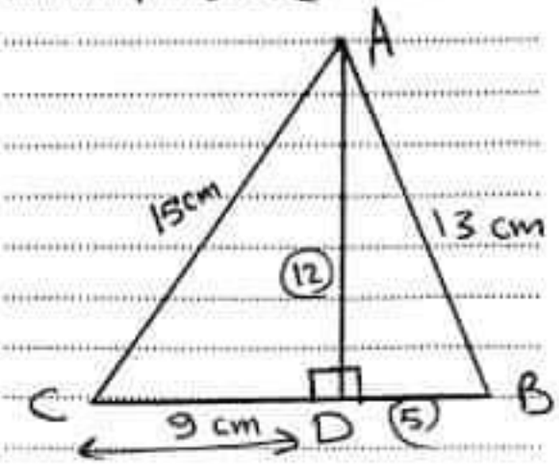
$$BC = \sqrt{(2)^2 - (\sqrt{3})^2} = 1$$

$$\sin C = \frac{\sqrt{3}}{2}$$

$$\cos C = \frac{1}{2}$$

$$\tan C = \frac{\sqrt{3}}{1} = \sqrt{3}$$

10 In the opposite figure



Find the value of

$\tan(C\hat{A}D) + \tan(B\hat{A}D)$

$\tan(C\hat{A}D) - \tan(B\hat{A}D)$

Sol In ΔACD

$AD = \sqrt{(15)^2 - (9)^2} = 12\,cm$

in ΔADB

$BD = \sqrt{(13)^2 - (12)^2} = 5\,cm$

* the expression

$= \frac{9}{12} + \frac{5}{12}$

$= \frac{9}{12} - \frac{6}{12}$

$= \boxed{\frac{7}{2}}$

11 ABCD is a Trapezuid

In which $\overline{AD} \parallel \overline{BC}$

$m(\hat{B}) = 90°$

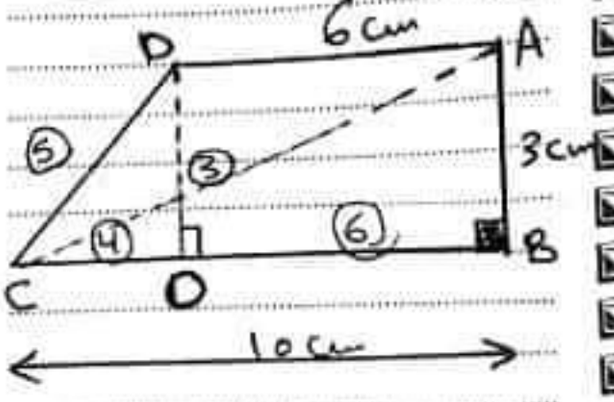
$AB = 3\,cm$, $AD = 6\,cm$

$BC = 10\,cm$

prove that

$\cos(D\hat{C}B) - \tan(A\hat{C}B) = \frac{1}{2}$

Sol



Draw $\overline{DO} \perp \overline{BC}$

ABOD is rectangle

$\therefore OB = AD = 6\,cm$

$DO = AB = 3\,cm$

$CO = 10 - 6 = 4\,cm$

$DC = \sqrt{3^2 + 4^2} = 5\,cm$

$\cos(D\hat{C}B) - \tan(A\hat{C}B)$

$= \frac{4}{5} - \frac{3}{10}$

$= \frac{1}{2} = R.H.S$

(12) ABC is a triangle where AB = AC = 10 cm

BC = 12 cm

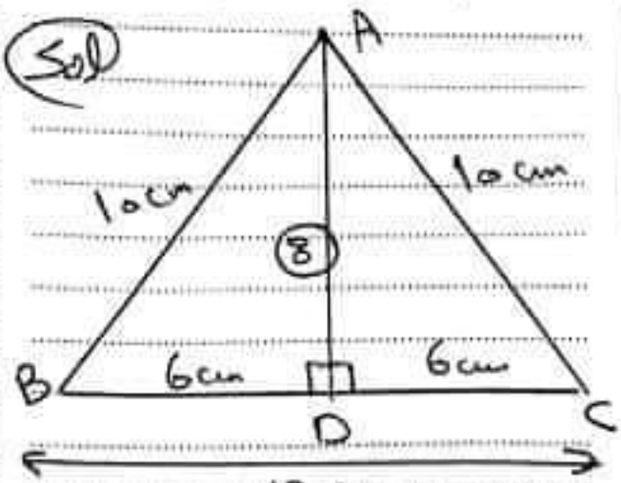
Find

(1) m(∠B)

(2) prove that $\sin B + \cos C = 1.4$

(3) prove that $\sin^2 C + \cos^2 C = 1$

Sol



Draw $\overline{AD} \perp \overline{BC}$

(1) $\cos B = \frac{6}{10} = \frac{3}{5}$

$\therefore m(\angle B) = 53^\circ 7' 49''$

(2) $\sin B + \cos C = \frac{8}{10} + \frac{6}{10}$

$= \frac{14}{10} = 1.4$

(3) $\sin^2 C + \cos^2 C$

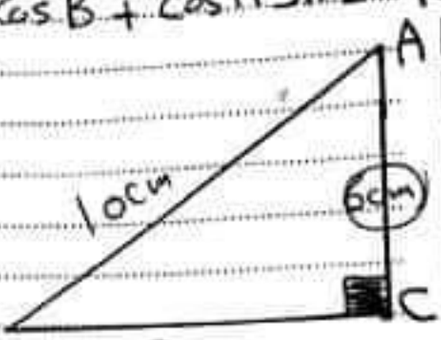
$= (\frac{8}{10})^2 + (\frac{6}{10})^2 = 1$

(13) ABC is right angled triangle at C where AB = 10 cm, BC = 8 cm

prove that

$\sin A \cos B + \cos A \sin B = 1$

Sol



$AC = \sqrt{(10)^2 - (8)^2} = 6$ cm

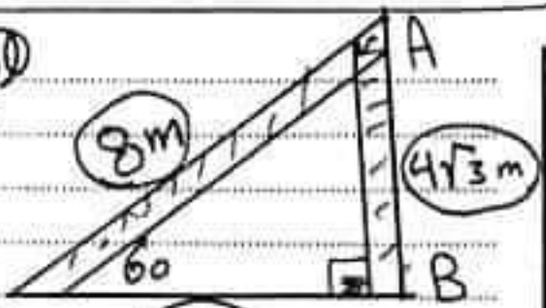
$\sin A \cos B + \cos A \sin B$

$= \frac{8}{10} \times \frac{8}{10} + \frac{6}{10} \times \frac{6}{10} = 1$

$=$ R.H.S

(14) due to the wind the upper part of a tree was broken and make with the horizontal an angle of measure 60° if the distance between the top of the tree and the base is (4 m) find the length of the tree

Sol



$\tan 60 = \frac{AB}{4}$

$\therefore AB = 4 \tan 60 = 4\sqrt{3}$ m

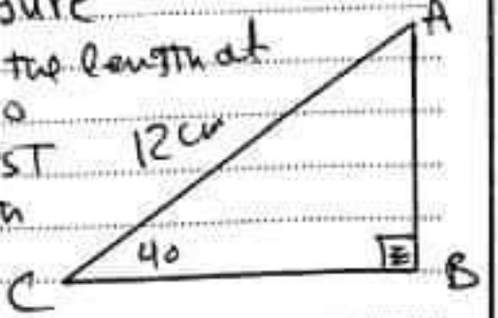
$\therefore AC = \sqrt{(4)^2 + (4\sqrt{3})^2} = 8$ m

the length of the tree

$= 4\sqrt{3} + 8 \simeq 15$ m

---

(15) in the opposite figure Find the length of $\overline{AB}$ to nearest tenth



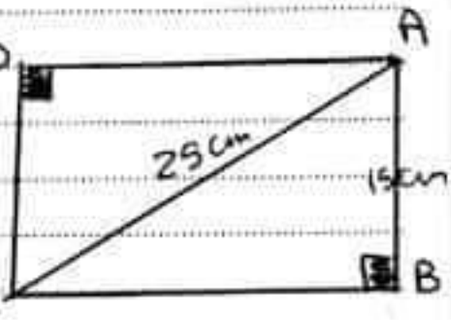
Sol $\frac{\sin 40}{1} = \frac{AB}{12}$

$\therefore AB = 12 \sin 40 \simeq 7.7$ cm

---

(16) in the opposite figure

Find $m(A\hat{C}B)$ and the area of rectangle



Sol $\sin(A\hat{C}B) = \frac{15}{25}$

$= \frac{3}{5}$

$\therefore m(A\hat{C}B) = 36^\circ 52' 11''$

$BC = \sqrt{(25)^2 - (15)^2} = 20$ cm

area of rectangle

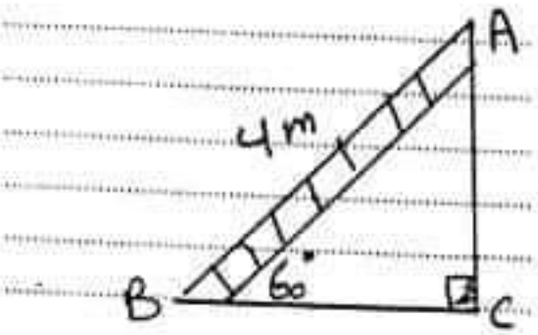
$= L \times W = 20 \times 15$

$= 300$ cm^2

---

(17) $\overline{AB}$ is a ladder of length 4 meters its upper end A stand at a vertical wall and its lower end B on an horizontal ground and the measure of angle of inclination of the ladder on the ground is 60°

Find $\overline{AC}$ length where AC is the distance between upper end and ground



$\frac{\sin 60}{1} = \frac{AC}{4}$

$AC = 4 \sin 60 = 2\sqrt{3}$ m

(18) if $\tan x = 4\cos 30 - \tan 60$

find x

Sol $\tan x = 4 \times \frac{\sqrt{3}}{2} - \sqrt{3}$

$\tan x = \sqrt{3}$

$x = 60$

(19) $2\sin A = \tan^2 60 - 2\tan 45$

Sol $2\sin A = (\sqrt{3})^2 - 2 \times 1$

$2\sin A = 1$

$\therefore \sin A = \frac{1}{2}$

$A = 30$

(20) if $\sin \frac{x}{3} = \frac{1}{2}$

then $x =$ ....

$\therefore \sin \frac{x}{3} = \frac{1}{2}$

$\therefore \frac{x}{3} = 30$

$\therefore x = 3 \cdot 30 = 90°$

(21) if the ratio between the measures of the interior angles of a triangle is 3 : 4 : 7 find the degree measure of each angle

Sol Let the measures of angles $3x$, $4x$ and $7x$

$\therefore 3x + 4x + 7x = 180$

$14x = 180$ ÷14

$x = \frac{90}{7}$

the measure of

1) first angle $= 3 \times \frac{90}{7} =$

2) 2nd angle $= 4 \times \frac{90}{7}$

3) 3rd angle $= 7 \times \frac{90}{7}$

$= 90°$

(22) two supplementary angles the ratio between their measure 3:5 find the degree measure of each angle

Sol

let the measures of angles 3X and 5X

$3X + 5X = 180$

$8X = 180$ (÷8)

$X = 22.5$

the measure of the first angle $= 3 \times 22.5 = 67^\circ 30'$

the measure of the second angle $= 5 \times 22.5$

$= 112^\circ 30'$

---

(23) if

$X \sin 45 \cos 45 \tan 60 = \tan^2 45 - \cos^2 60$

find X

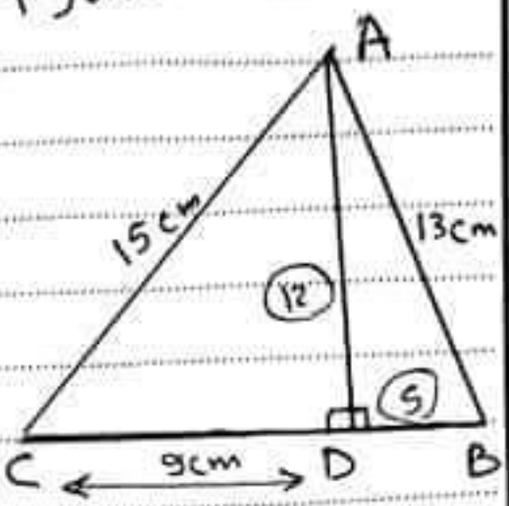
Sol

$X \cdot \frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}} \times \sqrt{3} = 1^2 - (\frac{1}{2})^2$

$\frac{\sqrt{3}}{2} X = \frac{3}{4}$ (÷ $\frac{\sqrt{3}}{2}$)

$X = \frac{\sqrt{3}}{2}$

(24) in the opposite figure



find the value of

$$\frac{\tan(C\hat{A}D) + \tan(B\hat{A}D)}{\tan(C\hat{A}D) - \tan(B\hat{A}D)}$$

Sol

in ΔACD

$AD = \sqrt{15^2 - 9^2}$

$= 12$ cm

in ΔADB

$BD = \sqrt{13^2 - 12^2} = 5$ cm

$$\frac{\tan(C\hat{A}D) + \tan(B\hat{A}D)}{\tan(C\hat{A}D) - \tan(B\hat{A}D)}$$

$$= \frac{\frac{9}{12} + \frac{5}{12}}{\frac{9}{12} - \frac{5}{12}}$$

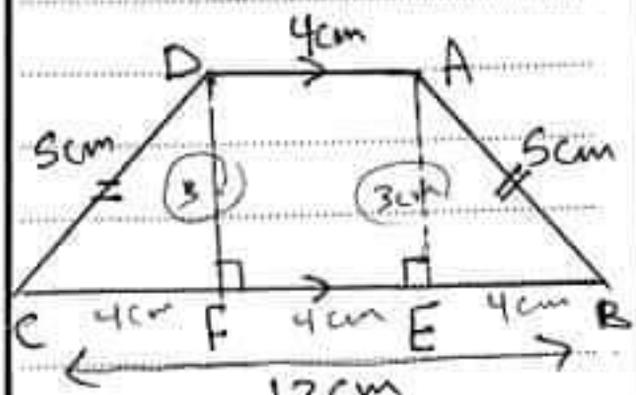
$= \frac{7}{2}$

(25) ABCD is an isosceles Trapezium $\overline{AD} // \overline{BC}$, AD = 4 cm, AB = 5 cm, BC = 12 cm

Prove that

$$\frac{5\tan B\cos C}{\sin^2 C+\cos^2 B}=3$$

Sol



the figure

AEFD is a rectangle

$\therefore FE = DA = 4$ cm

$\therefore BE = CF = \frac{12-4}{2} = 4$ cm

$AE = \sqrt{5^2-4^2} = 3$ cm

$$\frac{5\tan B\cos C}{\sin^2 C+\cos^2 B} = \frac{5\times\frac{3}{4}\times\frac{4}{5}}{(\frac{3}{5})^2+(\frac{4}{5})^2}$$

$= 3$

(26) if $2\sin A = \tan^2 60 - 2\tan 45$

Sol $2\sin A = (\sqrt{3})^2 - 2\times 1$

$2\sin A = 1$ (÷2)

$\sin A = \frac{1}{2}$

$m(\hat{A}) = 30°$

(27) if $X^2 = \cos 60\sin 30 + \cos 30\sin 60$

Sol $X^2 = \frac{1}{2}\times\frac{1}{2} + \frac{\sqrt{3}}{2}\times\frac{\sqrt{3}}{2}$

$= \frac{1}{4}+\frac{3}{4} = 1$

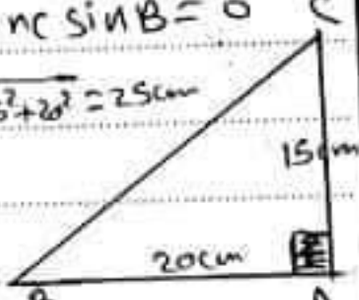
$X = \pm 1$

(28) ABC is a right angled triangle at A, AC = 15 cm, AB = 20 cm

find (1) $2\sin C\cos C$ (2) $\tan C\times\tan B$

(3) Prove that $\cos C\cos B - \sin C\sin B = 0$

Sol $BC = \sqrt{15^2+20^2} = 25$ cm



(1) $2\sin C\cos C = 2\times\frac{20}{25}\times\frac{15}{25} = \frac{24}{25}$

(2) $\tan C\times\tan B = \frac{20}{15}\times\frac{15}{20} = 1$

(3) $\cos C\cos B - \sin C\sin B$

$= \frac{15}{25}\times\frac{20}{25} - \frac{20}{25}\times\frac{15}{25} = 0$

29 Prove that

ΔABC is right angled at B then find its area where

A(1, 4), B(-1, -2)

C(2, -3)

Sol

$AB = \sqrt{(1+1)^2+(4+2)^2} = \sqrt{40}$ l.u

$BC = \sqrt{(-1-2)^2+(-2+3)^2} = \sqrt{10}$ l.u

$AC = \sqrt{(1-2)^2+(4+3)^2} = \sqrt{50}$ l.u

$(AC)^2 = (\sqrt{50})^2 = 50$

$(AB)^2 + (BC)^2 = (\sqrt{40})^2 + (\sqrt{10})^2$

$= 50 = (AC)^2$

$\therefore$ ABC is right angled at B

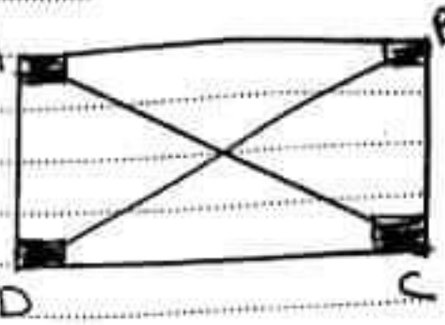
area of $\Delta = \frac{1}{2} \times b \times h$

$= \frac{1}{2} \times \sqrt{40} \times \sqrt{10}$

$= 10$ squared unit

30 Prove that the Points A(1, 0), B(-1, 4), C(-7, 8), D(9, 4) are vertices of rectangle and find its diagonal length

Sol



$AB = \sqrt{(1+1)^2+(0-4)^2} = \sqrt{20}$ l.u

$BC = \sqrt{(-1-7)^2+(4-8)^2} = 4\sqrt{5}$ l.u

$CD = \sqrt{(-7-9)^2+(8-4)^2} = \sqrt{20}$ l.u

$DA = \sqrt{(9-1)^2+(4-0)^2} = 4\sqrt{5}$ l.u

$AC = \sqrt{(7-1)^2+(8-0)^2} = 10$ l.u

$BD = \sqrt{(9+1)^2+(4-4)^2} = 10$ l.u

$\therefore$ AB = CD

BC = DA

AC = BD

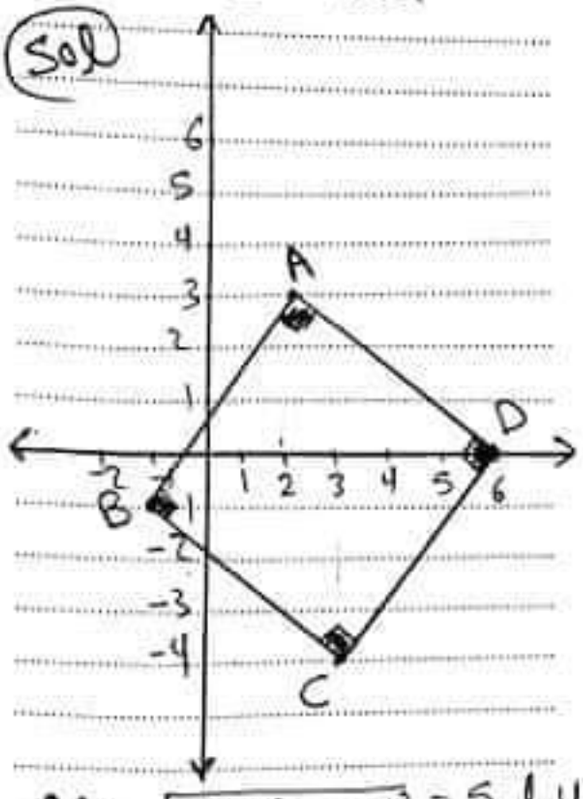
$\therefore$ ABCD is a rectangle

its diagonal length

AC = BD = 10 length unit

(31) represent graphically on the diagram coordinates the points A(2,3), B(-1,-1) C(3,-4), D(6,0) then proul that ABCD is a square and find its area

Sol



$AB = \sqrt{(2+1)^2+(3+1)^2} = 5$ l.u

$BC = \sqrt{(-1-3)^2+(-1+4)} = 5$ l.u

$CD = \sqrt{(3-6)^2+(-4-0)^2} = 5$ l.u

$DA = \sqrt{(2-6)^2+(3-0)^2} = 5$ l.u

$AC = \sqrt{(2-3)^2+(3+4)^2} = \sqrt{50}$ l.u

$BD = \sqrt{(-1-6)^2+(-1-0)^2} = \sqrt{50}$ l.u

$\therefore AB = BC = CD = DA$

$AC = BD$

$\therefore$ ABCD is a square

its area $= 5 \times 5$

$= 5 \times 5 = 25$ squared unit

(32) Proul that ΔABC where A(1,-2), B(-4,2) C(1,6) is an isosceles triangle

Sol

$AB = \sqrt{(1+4)^2+(-2-2)^2} = \sqrt{41}$ l.u

$BC = \sqrt{(-4-1)^2+(2-6)^2} = \sqrt{41}$ l.u

$AC = \sqrt{(1-1)^2+(-2-6)^2} = 8$ l.u

$\therefore AB = BC$

$\therefore \Delta ABC$ is an isosceles

(33) if the distance between (x,5) and (6,1) is $2\sqrt{5}$ length unit find x

Sol

$\sqrt{(x-6)^2+(5-1)^2} = 2\sqrt{5}$

$\sqrt{(x-6)^2+16} = 2\sqrt{5}$ by squaring

$(x-6)^2+16 = 20$

$(x-6)^2 = 4$

$\therefore x-6 = \pm 2$

$x-6=2$ | $x-6=-2$

$x = 2+6$ | $x = -2+6$

$= 8$ | $= 4$

34 Prove that the points $A(3,-1)$, $B(-4,6)$, $C(2,-2)$ lie on a circle of centre $M(-1,2)$ and find its circumference $\pi = 3.14$

Sol

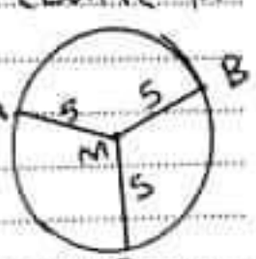
$MA = \sqrt{(-1+3)^2+(2+1)^2} = 5$ l.u

$MB = \sqrt{(-1+4)^2+(2-6)^2} = 5$ l.u

$MC = \sqrt{(-1-2)^2+(2+2)^2} = 5$ l.u

$\therefore MA = MB = MC = 5$

$\therefore$ A, B and C lie on a circle at centre M



circumference $= 2\pi r$

$= 2 \times 3.14 \times 5$

$= 31.4$ length unit

35 find the value of A if the distance between $(a,7)$, $(3a-1,-5)$ is 13

Sol

$\sqrt{(3a-1-a)^2+(-5-7)^2} = 13$

$\sqrt{(2a-1)^2+144} = 13$

by squaring

$(2a-1)^2+144 = 169$

$(2a-1)^2 = 169-144$

$(2a-1)^2 = 25$

$2a-1 = \pm 5$

$2a-1=5$	$2a-1=-5$
$2a=5+1$	$2a=-5+1$
$2a=6$	$2a=-4$
$a=3$	$a=-2$

36 if $A(x,3)$, $B(3,2)$, $C(5,1)$ if $AB=BC$ find x

Sol

$AB = BC$

$\sqrt{(x-3)^2+(3-2)^2} = \sqrt{(3-5)^2+(2-1)^2}$

$\sqrt{(x-3)^2+1} = \sqrt{5}$

by squaring

$(x-3)^2+1 = 5$

$(x-3)^2 = 5-1$

$(x-3)^2 = 4$

$x-3 = \pm 2$

$x-3=2$	$x-3=-2$
$x=3+2=5$	$x=-2+3=1$

37 if C(6,-4) is the midpoint of $\overline{AB}$ where A(5,-3) find the coordinates of B

Sol

A(5,-3) — x — C(6,-4) — B(x,y)

$\frac{5+x}{2} = \frac{6}{1}$ | $\frac{-3+y}{2} = \frac{-4}{1}$

$5+x = 12$ | $-3+y = -8$

$x = 12-5 = 7$ | $y = -8+3$

$y = -5$

B(7,-5)

E is midpoint of $\overline{AC}$

$= \left(\frac{3+1}{2}, \frac{-1+7}{2}\right)$

$= (2,3)$

$\frac{x+6}{2} = \frac{2}{1}$ | $\frac{y+2}{2} = \frac{3}{1}$

$x+6 = 4$ | $y+2 = 6$

$x = 4-6 = -2$ | $y = 6-2 = 4$

D(-2,4)

$DE = \sqrt{(-2-2)^2 + (4-3)^2}$

$= \sqrt{17}$ length unit

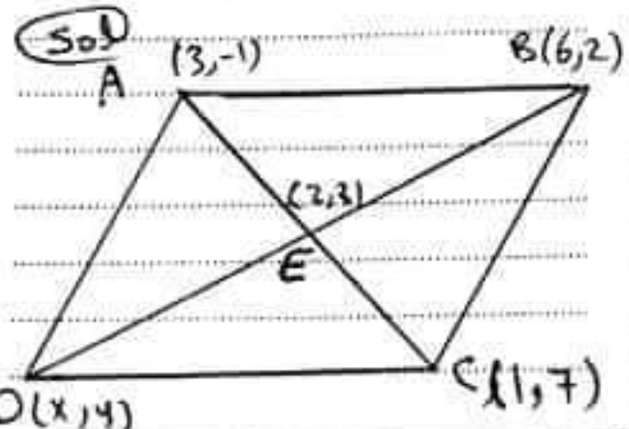
38 ABCD is a parallelogram its two diagonal intersects at E where

A(3,-1), B(6,2), C(1,7)

Find

1. coordinates of E and D
2. the length of $\overline{DE}$

Sol



39 $\overline{AB}$ is a diameter in a circle M if B(8,11) M(5,7) Find

1. the coordinates of A
2. the radius length
3. the equation of the perpindicular straight line to $\overline{AB}$ at B

Sol

A(x,y) — x — M(5,7) — B(8,11)

$\frac{x+8}{2} = 5$ | $\frac{y+11}{2} = 7$

$x+8 = 10$ | $y+11 = 14$

$x = 2$ | $y = 3$

A(2,3)

r = MB $= \sqrt{(8-5)^2 + (11-7)^2} = 5$ length

(3) Slope of $\overline{AB} = \frac{11-3}{8-2}$

$= \frac{4}{3}$

Slope of perpindicular $= \frac{-3}{4}$

$y = mx + c$

$y = \frac{-3}{4}x + c$

B(8,11) satisfies the equation

$11 = \frac{-3}{4} \times 8 + c$

$11 = -6 + c$

$11 + 6 = c$

$c = 17$

$y = \frac{-3}{4}x + 17$

(11) Prove that the straight line passes through $(4, 3\sqrt{3})$ and $(5, 2\sqrt{3})$ is perpindicular to the straight line which make an angle of measure 30° with the positive direction of x-axis

$m_1 = \frac{2\sqrt{3} - 3\sqrt{3}}{5-4} = -\sqrt{3}$

$m_2 = \tan 30 = \frac{1}{\sqrt{3}}$

$m_1 \times m_2 = -\sqrt{3} \times \frac{1}{\sqrt{3}} = -1$

$\therefore l_1 \perp l_2$

(10) Prove that the straight line passes through $(-3, -2)$ and $(4, 5)$ is parallel to the straight line which make with the positive direction of x-axis an angle of measure 45°

Sol $m_1 = \frac{5+2}{4+3} = 1$

$m_2 = \tan 45 = 1$

$\therefore m_1 = m_2$

$\therefore l_1 // l_2$

(12) Prove that the points A(0,2), B(1,5), C(2,8) are collinear

Sol

Slope of $\overleftrightarrow{AB} = \frac{5-2}{1-0} = 3$

Slope of $\overleftrightarrow{BC} = \frac{8-5}{2-1} = 3$

Slope of $\overleftrightarrow{AB}$ = Slope of $\overleftrightarrow{BC}$

and B is a common point

$\therefore$ A, B and C are collinear

43 if the points $(0,1)$, $(a,3)$ and $(2,5)$ are collinear (m_1, m_2) find a

sol ∵ points are collinear

$m_1 = m_2$

$\frac{3-1}{a-0} = \frac{5-1}{2-0}$

$\frac{2}{a} = \frac{4}{2}$

$a = \frac{2\times 2}{4} = 1$

44 find the measure of the positive angle which the straight line

$3x + 3y + 7 = 0$

makes with the positive direction of x-axis's

sol $m = \frac{-3}{3} = -1$

$\therefore \tan\theta = -1$

$\theta = 135°$

45 find the length of the intercepted part at y-axis and the slope of the straight line

$\frac{x}{2} + \frac{y}{3} = 1$

sol

$\frac{1}{2}x + \frac{1}{3}y - 1 = 0$

$m = \frac{-\frac{1}{2}}{\frac{1}{3}} = \frac{-3}{2}$

$C = \left|\frac{1}{\frac{1}{3}}\right| = 3$ l.u

46 if Δxyz is right at y $x(3,5)$, $y(4,2)$ $z(3,a)$ find a

sol ∵ Δxyz right at y

∵ $xy \perp yz$

$m_1 \times m_2 = -1$

$\frac{2-5}{4-3} \times \frac{a-2}{3-4} = -1$

$\frac{-3}{1} \times \frac{a-2}{-1} = -1$

$-3a + 6 = 1$

$-3a = 1 - 6$

$+3a = +5$

$\therefore a = \frac{5}{3}$

(47) If the equations

$2x - 3y + a = 0$

$3x + by - 6 = 0$

are equations of two straight lines find b

(1) if $L_1 // L_2$

Sol $m_1 = m_2$

$\frac{-2}{-3} = \frac{-3}{b}$

$b = \frac{-3 \times 3}{2} = \frac{-9}{2}$

(2) $L_1 \perp L_2$

$\therefore m_1 \times m_2 = -1$

$\frac{2}{3} \times \frac{-3}{b} = -1$

$\frac{-6}{3b} = \frac{-1}{1}$

$+3b = +6$

$b = 2$

(3) if $(1, 3)$ lies on L_1 find a

$(\overset{x}{1}, \overset{y}{3})$ satisfy the equation of L_1

$2 \times 1 - 3 \times 3 + a = 0$

$2 - 9 + a = 0$

$a = 7$

(48) Find the equation of the straight line its slope $\frac{1}{2}$ and the intercepts part of y-axis 2 length unit in the positive part find the intersection point with x-axis and y-axis

Sol $y = mx + c$

$y = \frac{1}{2}x + 2$

the intersection point with y-axis $(0, 2)$

x-axis $= (-4, 0)$

(49) find the equation of the straight line passes through the points (2,3) and (-3,2)

Sol $m = \frac{2-3}{-3-2} = \frac{1}{5}$

$y = \frac{1}{5}x + C$

x y

(2,3) satisfies the equation

$3 = \frac{1}{5} \times 2 + C$

$3 = \frac{2}{5} + C$

$C = 3 - \frac{2}{5} = \frac{13}{5}$

$y = \frac{1}{5}x + \frac{13}{5}$

(50) find the equation of the straight line passes through (3,4) and perpindicular to $5x - 2y + 7 = 0$

Sol $m_{given} = \frac{-5}{-2} = \frac{5}{2}$

$m_{perpindicular} = \frac{-2}{5}$

$y = \frac{-2}{5}x + C$

(3,4) satisfies the equation

$4 = \frac{-2}{5} * 3 + C$

$C = \frac{6}{5} + 4 = \frac{26}{5}$

$y = \frac{-2}{5}x + \frac{26}{5}$

(51) find the equation of the straight line passes through (1,6) and the mid point of $\overline{AB}$ where A(1,-2) B(3,-4)

Sol mid of $\overline{AB}$ $\left(\frac{1+3}{2}, \frac{-2-4}{2}\right)$

$= (2,-3)$

line passes through (1,6), (2,-3)

$m = \frac{-3-6}{2-1} = -9$

$y = -9x + C$

(1,6) satisfies

$6 = -9 \times 1 + C \quad C = 15$

$y = -9x + 15$

(52) find the equation of the straight line which cuts two positive parts of x-axis and y-axis respectively 4 and 9

Sol the straight line passes through (4,0) and (0,9)

$m = \frac{9-0}{0-4} = \frac{-9}{4}$

$y = mx + c$

$y = \frac{-9}{4} + 9$

(53) from the following table

x	1	2	3
y	1	3	a

find the equation of the straight line and find a

Sol the line passes through (1,1), (2,3)

$m = \frac{3-1}{2-1} = 2$

$y = 2x + c$

(1,1) satisfies equation

$1 = 2 \cdot x1 + c$

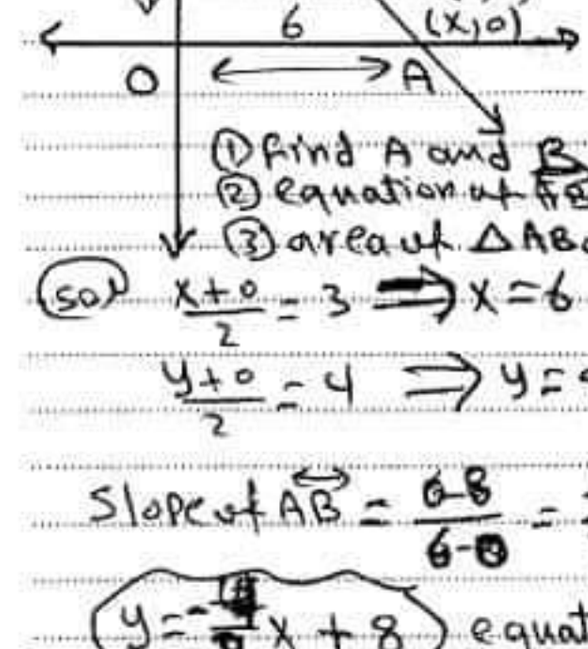
$c = -1$

$y = 2x - 1$

(3,a) satisfies

$a = 2 \times 3 - 1 = 5$

(54) from the opposite figure



① find A and B
② equation of AB
③ area of ΔABO

Sol $\frac{x+0}{2} = 3 \Rightarrow x = 6$

$\frac{y+0}{2} = 4 \Rightarrow y = 8$

slope of $\overleftrightarrow{AB} = \frac{8-0}{0-6} = \frac{-4}{3}$

$y = \frac{-4}{3}x + 8$ equation of AB

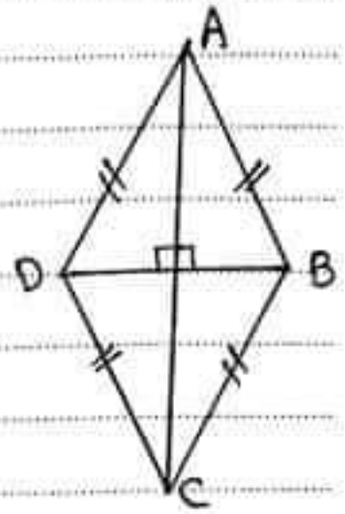
$y = -\frac{4}{3}x + 8$

area of ΔABO

$= \frac{1}{2} \times 8 \times 6 = 24$ squared unit

(55) Prove that the points A(5,3), B(6,-2) C(1,-1), D(0,4) are avertices of rhombus then find its area

Sol



$AB = \sqrt{(5-6)^2+(3+2)^2} = \sqrt{26}$ L.U

$BC = \sqrt{(6-1)^2+(-2+1)^2} = \sqrt{26}$ L.U

$CD = \sqrt{(0-1)^2+(4+1)^2} = \sqrt{26}$ L.U

$DA = \sqrt{(0-5)^2+(4-3)^2} = \sqrt{26}$ L.U

diagonals

$AC = \sqrt{(5-1)^2+(3+1)^2} = 4\sqrt{2}$ L.U

$BD = \sqrt{(6-0)^2+(-2-4)^2} = 6\sqrt{2}$ L.U

$AB = BC = CD = DA$

$AC \neq BD$

$\therefore$ ABCD is a rhombus

Area $= \frac{1}{2} \times d_1 \times d_2$

$= \frac{1}{2} \times 4\sqrt{2} \times 6\sqrt{2} = 24$ squared unit

(56) Prove that the points A(-2,5), B(3,3) C(-4,2) are not collinear if D(-9,4) Prove that ABCD is a parallelogram

Sol slope of $\overleftrightarrow{AB} = \frac{3-5}{3-(-2)} = \frac{-2}{5}$

slope of $\overleftrightarrow{BC} = \frac{2-3}{-4-3} = \frac{1}{7}$

slope of $\overleftrightarrow{AB} \neq$ slope of $\overleftrightarrow{BC}$

$\therefore$ A, B, C are not collinear

slope of $\overleftrightarrow{CD} = \frac{4-2}{-9+4} = \frac{-2}{5}$

slope of $\overleftrightarrow{DA} = \frac{4-5}{-9+2} = \frac{1}{7}$

$\therefore \overline{AB} \parallel \overline{CD}$

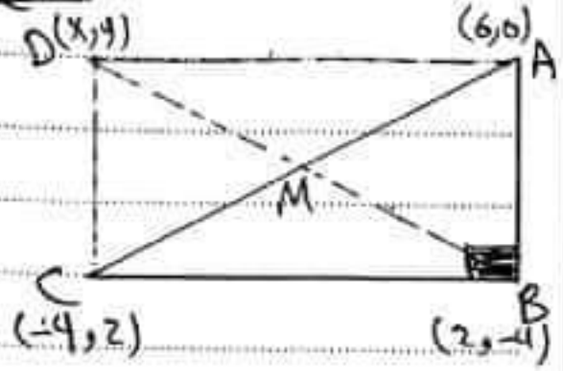
$\overline{BC} \parallel \overline{DA}$

$\therefore$ each two opposite sides are parallel

$\therefore$ ABCD is a parallelogram

(57) Prove that the points A(6,0) B(2,-4), C(-4,2) are vertices of a right angled triangle at B find the coordinates of D which make ABCD is a rectangle

Sol



$AB = \sqrt{(6-2)^2+(0+4)^2} = 4\sqrt{2}$

$BC = \sqrt{(2+4)^2+(-4-2)^2} = 6\sqrt{2}$

$AC = \sqrt{(6+4)^2+(0-2)^2} = \sqrt{104}$

$(AB)^2 = (4\sqrt{2})^2 = 32$

$(BC)^2 = (6\sqrt{2})^2 = 72$

$(AC)^2 = (\sqrt{104})^2 = 104$

$(AC)^2 = (AB)^2 + (BC)^2$

∴ ABC is right angled triangle at B

let M is midpoint of $\overline{AC}$

$M = \left(\frac{6+(-4)}{2}, \frac{0+2}{2}\right) = (1,1)$

M is midpoint of $\overline{BD}$

$M = \left(\frac{x+2}{2}, \frac{y+(-4)}{2}\right)$

$\therefore \frac{x+2}{2} = \frac{1}{1}$ | $\frac{y-4}{2} = \frac{1}{1}$

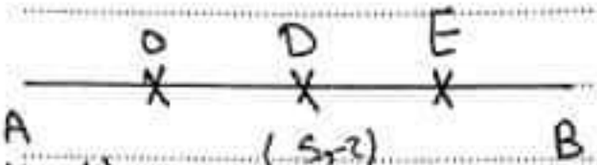
$x+2 = 2$ | $y-4 = 2$

$x = 2-2 = 0$ | $y = 2+4 = 6$

∴ D(0,6)

(58) If A(1,-6) B(9,2) find the coordinates of the points which divides $\overline{AB}$ into four equal parts

Sol



D is midpoint of $\overline{AB}$

$= \left(\frac{1+9}{2}, \frac{-6+2}{2}\right)$

$= (5,-2)$

E is midpoint of $\overline{DB}$

$= \left(\frac{5+9}{2}, \frac{-2+2}{2}\right) = (7,0)$

O is midpoint of $\overline{AD}$

$= \left(\frac{1+5}{2}, \frac{-6+(-2)}{2}\right)$

$= (3,-4)$

(59) prove that the straight line passes through (2,5), (4,5) is perpindicular to the straight line which passes through (3,7) and (3,9)

sol

$m_1 = \frac{5-5}{4-2} = \frac{0}{2} = 0$

$L_1 \parallel$ x-axis

$m_2 = \frac{9-7}{3-3} = \frac{2}{0}$ undefined

$L_2 \parallel$ y-axis

$\therefore L_1 \perp L_2$

(60) if $\overleftrightarrow{CD} \parallel$ x-axis C(4,2), D(-5,y) find y

sol $\because \overleftrightarrow{CD} \parallel$ x-axis

$\therefore y_1 = y_2$

$\therefore \boxed{y = 2}$

(61) if $\overleftrightarrow{AB} \parallel$ y-axis A(x,7), B(3,5) find x

sol $\because \overleftrightarrow{AB} \parallel$ y-axis

$\therefore x_1 = x_2 \Rightarrow \boxed{x = 3}$

(62) find the equation of the straight line which passes through (3,4) and parallel to $x - 3y + 5 = 0$

sol

$m_{given} = \frac{-1}{-3} = \frac{1}{3}$

$m_{parallel} = \frac{1}{3}$

$y = \frac{1}{3}x + c$

(3,4) satisfy the equation

$\therefore 4 = \frac{1}{3} \times 3 + c$

$4 = 1 + c$

$4 - 1 = c$ $(c = 3)$

$\boxed{y = \frac{1}{3}x + 3}$

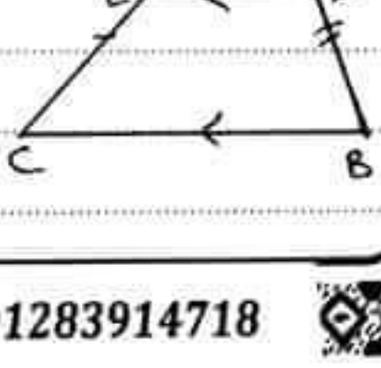
(63) ABC is a Triangle A(1,2), B(5,-2), C(3,4) D is midpoint of $\overline{AB}$, $\overrightarrow{DE}$ is drawn parallel to $\overline{BC}$ and cuts $\overline{AC}$ at E find the equation of $\overrightarrow{DE}$

sol

D is midpoint of $\overline{AB}$

$= \left(\frac{1+5}{2}, \frac{-2+2}{2}\right)$

$= (3, 0)$



E is midpoint of $\overline{AC}$

$= \left(\frac{1+3}{2}, \frac{2+4}{2}\right)$

$= (2,3)$

Slope of DE $= \frac{3-0}{2-3}$

$= -3$

equation of DE

$y = -3x + c$

(2,3) satisfy the equation

$3 = -3 \times 2 + c$

$3 = -6 + c$

$3 + 6 = c$

$c = 9$

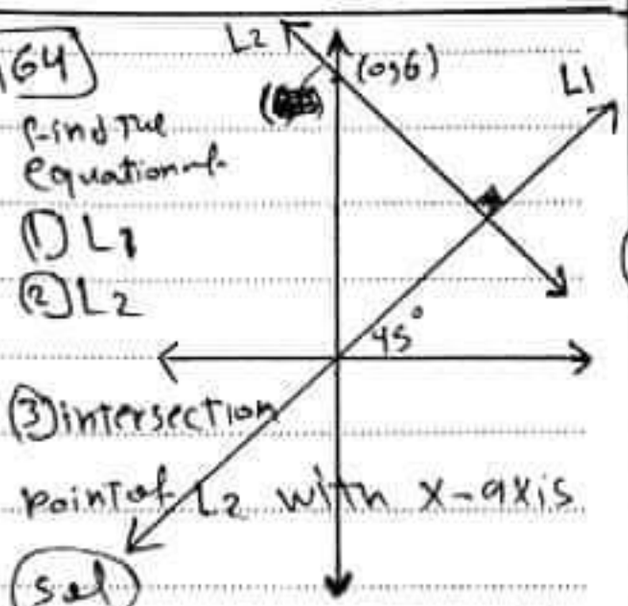
$y = -3x + 9$

(64) find the equation of

1) L_1

2) L_2

3) intersection point of L_2 with x-axis



sol

To find equation of L_1

Slope of L_1 $m = \tan 45 = 1$

L_1 passes through the origin

$y = x$ equation of L_1

$L_2 \perp L_1$

Slope of L_2 $m_2 = -1$

$y = -x + c$

L_2 cut y-axis at (0,6)

$y = -x + 6$ equation of L_2

L_2 cuts x-axis at $\left(\frac{-6}{-1}, 0\right) = (6,0)$

(65) find the equation of the straight line passes through (3,-4) and parallel to x-axis

sol $y = y_1$ $y = -4$

(66) the equation of the straight line passes through (5,4) and parallel to y-axis

sol $x = x_1$ $x = 5$

(67) find the intersection point of $2x - 3y + 6 = 0$ with the two axes

sol the straight line

cuts y-axis at $\left(0, \frac{-6}{-3}\right)$

$= (0,2)$

cuts x-axis at $\left(\frac{-6}{2}, 0\right)$

$(-3,0)$

Cumulative Problems from the previous Years

Complete

(1) the sum of measures of the accumulative angles at a point = ---

(2) the sum of measures of the interior angles of the hexagon = ---

(3) the number of diagonals of the pentagon = --- and of hexagon =

(4) ΔABC in which $m(\hat{B}) = 3m(\hat{A}) = 90^\circ$ then $m(\hat{C}) =$

(5) if ABCD is a parallelogram $m(\hat{A}) : m(\hat{B}) = 1 : 3$ then $m(\hat{B}) =$

(6) if 3, 7, k are lengths of triangle then k may be = (1, 3, 4, 7)

(7) the number of axes of symmetry of the isosceles Triangle = --- and of the equilateral triangle = ---

(8) the two base angle of the isosceles Triangle are ---

(9) in ΔABC $m(\hat{B}) > m(\hat{C})$ then AB --- AC

(10) the longest side in the right angled triangle is ---

(11) the quadrilateral whose diagonal are equal in length and perpindicular is ---

(12) the measure of the exterior angle at any vertex of the equilateral Triangle = ---

(13) If $\overline{AB} \equiv \overline{CD}$ then AB - CD = ----

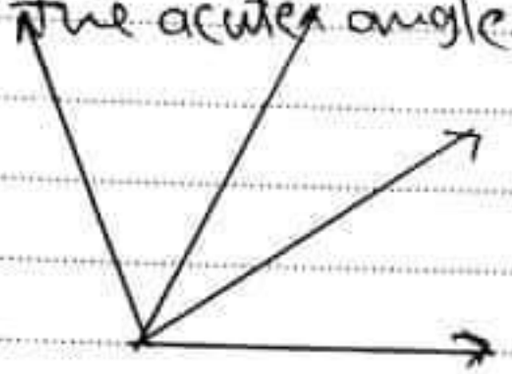
(14) The image of the point (-3, 5) by reflection in X-axis is ----- and by reflection in Y-axis is ----- and in origin point is -----

(15) The image of the point (2, 4) by a translation (2, 1) is -----

(16) The image of the point (-1, 2) by a rotation about (O) by 180° is -----

(17) The image of the point (1, 2) by a rotation about O by 90° is ---

(18) The number of the acute angle = ---



(19) The sum of measures of the two complementary angles = ---- and the sum of measures of two supplementary angles = ----

(20) if $m(\hat{A}) = 100°$ then $m(\text{reflex } \hat{A})$ = ----

(21) if two straight line intersects then each two vertically opposite angles are ----

(22) in ΔABC if $AB = AC = BC$ then $m(\hat{A})$ = ----

(23) If $\Delta ABC \sim \Delta XYZ$ then $m(\hat{A}) = m(\hat{\ })$

(24) The point of concurrence of medians of triangle divides it in ratio ---- from the side of base and in the ratio ---- from the side of vertex

(25) area of the circle = ---- and its circumference = ----

(26) The Triangle whose side lengths 5, 5 cm, ---- it's isosceles Triangle (9, 10, 11, 12)

(27) ΔABC $AB > AC$ then $m(\hat{B})$ ... $m(\hat{C})$

(28) The sum of measures of the interior angles of the triangle = ---

(29) The perpindicular straight line to a line segment from its mid point is called ----

(30) in the right angled triangle the length of the opposite side to an angle of measure = 30° = --- length of the hypotenuse

(31) the circumference of a circle whose diameter length = 14 cm = ---- cm

(32) ABCD is a parallelogram then $m(\hat{A}) + m(\hat{C}) = 200$ then $m(\hat{B}) =$ ---

(33) the rhombus whose diagonal lengths 6 cm and 8 cm its area = ---- cm^2

(34) a square whose diagonal length 10 cm its area = --- cm^2

(35) the two parallel straight lines to a third are ----

(36) if ABCD is a square then $m(C\hat{A}B) =$ ---

(37) the two perpindicular lines to a third are ----

(38) the median of triangle divides its surface into two triangles

(39) the parallelograms whose diagonals equal and not perpindicular is ----

المراجعة رقم (6)

الترم الثانى

Accumulative Questions in Geometry

1) The types of angles (zero, acute , right , obtuse , straight , reflex)

- The type of the angle of measure 75° is .....
- The type of the angle of measure 200° is ....
- The type of the angle of measure 90° is ....
- The type of the angle of measure 180° is
- The type of the angle of measure 95° is ....
- The type of the angle of measure $89^\circ\ 62\grave{}$ is ....

2) The sum of measures of complementary angles =.....°

3) The sum of measures of supplementary angles =.....°

4) The sum of measures of accumulative angles at a point =.....°

- if the measure of an angle is 65° ,then it complements angle ..... , supplements angle ..... ,and its reflex angle = ...
- if the ratio between two complementary angles is 7 : 11 then the measure of smaller angle = ...

5) If the two adjacent angles are complementary , then the outer sides of them are .....

6) If the two adjacent angles are supplementary , then the outer sides of them are .....

7) Each two vertically opposite angles are ..... .

8) The sum of measures of exterior angles of any polygon =.....°

9) The sum of measures of interior angles of triangle = ... °

10) The sum of measures of interior angles of a quadrilateral =.....°

11) The sum of measures of interior angles of a pentagon =.....°

The measure of interior angle of regular pentagon = ...

Accumulative Questions in Geometry

12) **The sum of measures of interior angles of a hexagon =.....°**
The measure of interior angle of regular hexagon = ...

13) **The number of diagonals of a quadrilateral .... , a pentagon .... , a hexagon .... , a triangle ....**

14) **The number of axes of symmetry of Square has ..... , Equilateral triangle has .... Rectangle has ..... , Rhombus has .... , isosceles triangle has ..... isosceles trapezium has .... , trapezium has ..... , Parallelogram has .... Scalene triangle has..... , circle has .....**

15) **If ABCD square ,then the axis of symmetry of AC is .....**

16) **In Square ABCD , m (∠ BAC) = ...**

17) **ABCD is a parallelogram , if m (∠ A) = 70° , then :**
m (∠ B) = ... , m (∠ C) = ... , m (∠ D) = ...

18) **ABCD is a parallelogram , if m (∠ A) + m (∠ C) = 200° , then m (∠ D) = ...°**

19) **ABCD is a parallelogram , if m (∠ A) = 3 m (∠ B) , then m (∠ C) = ...°**

20) **in a parallelogram , the diagonals are .....**

21) **A parallelogram with diagonals are equal called .....**

22) **A parallelogram with diagonals are perpendicular called .....**

23) **A parallelogram with diagonals equal and perpendicular called .....**

24) **A parallelogram with an angle right called .....**

25) **A parallelogram with sides are equal in length called .....**

26) **A rectangle , its sides are equal or its diagonals are perpendicular called .....**

27) **A Rhombus , its angles are right or its diagonals are equal called .....**

28) **The measure of each interior angle of equilateral triangle = ...**

Accumulative Questions in Geometry

29) The number of altitudes of right angled triangle triangle = ...

30) The number of medians of isosceles triangle = ...

31) The point of intersection of medians of triangle divides each one in the ratio 2 : ..... from vertex ,and 3 : ..... from base

32) The sum of length of any two sides in triangle ..... the length of third Side.

- if the length of two sides in triangle 3 cm ,5 cm , then the length of third side ∈] ....., ...[
- if the length of two sides in triangle 4 cm , 7 cm , then the length of third can be ..... cm (3 , 8 , 11)
- a triangle with one axis of symmetry and two side lengths 3 cm and 8 cm ,then its perimeter = ...

33) In Δ XYZ if m (∠ X) = 120° , then the longest side is .....

34) if Δ ABC is a right angled triangle at B , then The longest side is .....

35) In the right angled triangle , the length of side opposite to angle with measure 30° is ..... the hypotenuse. (equal , half , twice)

36) In the right angled triangle , the length of the hypotenuse is ..... The median drawn from the right vertex. (equal , half , twice)

If ABC is a right angled triangle at B , AB = 3cm , BC = 4 cm , then :

- its perimeter = ... , its area = ...
- the length of median drawn from the right vertex = ... cm

37) If XY is axis of symmetry of AB , then $\overline{XA}$ ..... $\overline{XB}$ (= , ⊥ , // , ≡) and XY..... AB (= , ⊥ , // , ≡)

Accumulative Questions in Geometry

38) if L_1 , L_2 are two straight lines and $L_1 \cap L_2 = \emptyset$, then L_1 ..... L_2 ($\perp$, //)

39) The image of the point (5,-3) By reflection in the x-axis is .....

40) The image of the point (-2 , 1) By reflection in the y-axis is .....

41) The image of the point (5,-3) By reflection in the origin point is .....

42) The image of the point (1,-4) By translation (x+2 , y) is .....

43) The area of square its perimeter 20 cm = ...

44) The area of square its diagonal length 6 cm = ...

45) The area of rhombus its side length 4 cm and height 3 cm = ...

46) The area of rhombus its diagonals lengths 6cm , 4cm = ...

47) If the lengths of diagonals of a rhombus 12cm , 16cm , then its side length = ...

48) The area of rectangle its width 6 cm and diagonal length 10 cm = ... , and its perimeter = ...

49) The area of parallelogram whose the lengths of two bases 6 cm , 8 cm and its smaller height 5 cm = ...

50) ABCD is a parallelogram its area = 36 cm^2 , $E \in \overline{AD}$, then the area of Δ EBC = ...

Accumulative Questions in Geometry

51) The area of trapezium whose middle base length is 7 cm , its height 4 cm = ...

52) The area of trapezium whose lengths of two parallel bases 5 cm, 9 cm ,and its height 3 cm = ...

53) A circle with diameter 7 cm , then its area = ... , its perimeter = ...

54) A circle with area 9π cm^2 , then its radius = ...

55) A circle with circumference 9π cm , then its radius = ...

9 يلا نلم المنهج

Accumulative Questions in Geometry

0 ↔ 90 ↔ 180 ↔ 360

1) The types of angles (zero, acute , right , obtuse , straight , reflex)

- The type of the angle of measure 75° is ...acute
- The type of the angle of measure 200° is ...reflex
- The type of the angle of measure 90° is ...right
- The type of the angle of measure 180° is straight
- The type of the angle of measure 95° is ..obtuse
- The type of the angle of measure 89° 62` is ..obtuse

2) The sum of measures of complementary angles =...90...°

3) The sum of measures of supplementary angles =...180...°

4) The sum of measures of accumulative angles at a point =...360...°

- if the measure of an angle is 65° ,then it complements angle 25° , supplements angle ...115°... ,and its reflex angle = 295°

- if the ratio between two complementary angles is 7 : 11 then the measure of smaller angle = ...35°

5) If the two adjacent angles are complementary , then the outer sides of them are ...perpendicular

6) If the two adjacent angles are supplementary , then the outer sides of them are ...on The same straight line

7) Each two vertically opposite angles are ...equal in measure

8) The sum of measures of exterior angles of any polygon =...360...°

9) The sum of measures of interior angles of triangle = ...180...°

10) The sum of measures of interior angles of a quadrilateral =...360...°

11) The sum of measures of interior angles of a pentagon =...540...°

The measure of interior angle of regular pentagon = ...108...

Accumulative Questions in Geometry

12) The sum of measures of interior angles of a hexagon =..720..°
The measure of interior angle of regular hexagon = ..120..

13) The number of diagonals of a quadrilateral ..2.. , a pentagon ..5.. ,
a hexagon ..9.. , a triangle ..zero..

14) The number of axes of symmetry of Square has ...4.. , Equilateral triangle has ..3.. Rectangle has ..2.. , Rhombus has ..2.. , isosceles triangle has ..1...
isosceles trapezium has ..1.. , trapezium has ..0.. , Parallelogram has ..0..
Scalene triangle has..0.. , circle has ..infinite..

15) If ABCD square ,then the axis of symmetry of AC is ..BD..

16) In Square ABCD , m (∠ BAC) = ..45°..

17) ABCD is a parallelogram , if m (∠ A) = 70° , then :
m (∠ B) = ..110.. , m (∠ C) = ..70.. , m (∠ D) = ..110..

18) ABCD is a parallelogram , if m (∠ A) + m (∠ C) = 200° , then m (∠ D) = 80°

19) ABCD is a parallelogram , if m (∠ A) = 3 m (∠ B) , then m (∠ C) = 135°

20) in a parallelogram , the diagonals are ..bisect each other..

21) A parallelogram with diagonals are equal called ..rectangle..

22) A parallelogram with diagonals are perpendicular called ..rhombus..

23) A parallelogram with diagonals equal and perpendicular called ..square..

24) A parallelogram with an angle right called ..rectangle..

25) A parallelogram with sides are equal in length called ..rhombus..

26) A rectangle , its sides are equal or its diagonals are perpendicular called ..square..

27) A Rhombus , its angles are right or its diagonals are equal called ..square..

28) The measure of each interior angle of equilateral triangle = ..60°..

Accumulative Questions in Geometry

29) **The number of altitudes of right angled triangle triangle =** 3

30) **The number of medians of isosceles triangle =** 3

31) **The point of intersection of medians of triangle divides each one in the ratio 2 :** 1 **from vertex ,and 3 :** 6 **from base**

32) **The sum of length of any two sides in triangle** greater Than **the length of third Side.**

- if the length of two sides in triangle 3 cm ,5 cm , then the length of third side ∈] 2 , 8 [

- if the length of two sides in triangle 4 cm , 7 cm , then the length of third can be ..... cm (3 , (8) , 11)

- a triangle with one axis of symmetry and two side lengths 3 cm and 8 cm ,then its perimeter = 19 cm

33) **In Δ XYZ if m (∠ X) = 120° , then the longest side is** YZ

34) **if Δ ABC is a right angled triangle at B , then The longest side is** AC

35) **In the right angled triangle , the length of side opposite to angle with measure 30° is ..... the hypotenuse. (equal , half , twice)**

36) **In the right angled triangle , the length of the hypotenuse is ..... The median drawn from the right vertex. (equal , half , twice)**

If ABC is a right angled triangle at B , AB = 3cm , BC = 4 cm , then :

- its perimeter = 3+4+5=12 ,its area = $\frac{1}{2}$ x 3 x 4 = 6 cm^2
- the length of median drawn from the right vertex = 2.5 cm

37) **If XY is axis of symmetry of AB , then $\overline{XA}$ ..... $\overline{XB}$ (= , ⊥ , // , (≡)) and XY..... AB (= , (⊥) , // , ≡)**

Accumulative Questions in Geometry

38) if L_1 , L_2 are two straight lines and $L_1 \cap L_2 = \emptyset$, then L_1 ..... L_2 ($\perp$, //)

39) The image of the point (5,-3) By reflection in the x-axis is ..(5,3)..

40) The image of the point (-2 , 1) By reflection in the y-axis is (2,1)

41) The image of the point (5,-3) By reflection in the origin point is (-5,3)

42) The image of the point (1,-4) By translation (x+2 , y) is ...(3,-4)

43) The area of square its perimeter 20 cm = ..S×S = 5×5 = 25 cm²
$S = P \div 4 = 20 \div 4 = 5$cm

44) The area of square its diagonal length 6 cm = $\frac{1}{2} \times d \times d = \frac{1}{2} \times 6 \times 6 = 18 cm^2$

45) The area of rhombus its side length 4 cm and height 3 cm = ..S×h = 4×3
= 12 cm²

46) The area of rhombus its diagonals lengths 6cm , 4cm = $\frac{1}{2} \times 6 \times 4 = 12$ cm²
$A = \frac{1}{2} \times d_1 \times d_2$

47) If the lengths of diagonals of a rhombus 12cm , 16cm , then its side length = ...10cm

48) The area of rectangle its width 6 cm and diagonal length 10 cm = l×w
= 6×8 = 48 cm²
, and its perimeter = 2×(l+w)
= 2×14 = 28cm

49) The area of parallelogram whose the lengths of two bases 6 cm , 8 cm and its smaller height 5 cm = b×h = 8×5 = 40cm²

50) ABCD is a parallelogram its area = 36 cm², $E \in \overline{AD}$, then the area of Δ EBC = ...
$\frac{1}{2} \times 36 = 18 cm^2$

9 يلا نلم المنهج

Accumulative Questions in Geometry

51) The area of trapezium whose middle base length is 7 cm , its height 4 cm = ...

$A = b \times h = 7 \times 4 = 28 cm^2$

52) The area of trapezium whose lengths of two parallel bases 5 cm, 9 cm ,and its height 3 cm = $\frac{1}{2} \times (b_1 + b_2) \times h = \frac{1}{2} \times 14 \times 3 = 21 cm^2$

53) A circle with diameter 7 cm , then its area = $\pi r^2 = \frac{22}{7} \times 3.5 = 38.5 cm^2$

$r = 3.5$

54) A circle with area 9π cm^2 , then its radius = $\sqrt{9} = 3$ cm

55) A circle with circumference 9π cm , then its radius = $\frac{9}{2} = 4.5$ cm

Math For Kids: Hoda Ismail

كيفية طباعة صفحات معينة من ملف معين

مثلا ازاى نطبع الصفحات من صفحة 4 الى صفحة 9